MEDICAL REPOSITORY,

FOR

NOVEMBER AND DECEMBER, 1806, AND JANUARY, 1807.

An EXHIBITION *of* FACTS, *shewing the* PROGRESS *of* ICE-ISLANDS *from Greenland to Newfoundland, the Impediment they made to Navigation, the Coldness they imparted to the Atmosphere and Ocean, and the Effect they evidently produced upon the Climate of North-America, as far South as New-York, during the Spring and Summer of* 1805. *By* SAMUEL L. MITCHILL, *Senator in the Congress of the United States, &c. dated New-York, November* 26, 1805.

THE separation of Ice from the places where it is formed, in the high latitudes both of the southern and northern hemispheres, has been long noticed by mariners. From the arctic circle it works toward the equator, and has been known to get as far as the fortieth degree of latitude before it melted. And floating from the antarctic regions, it has been known to reach the thirty-seventh parallel. In sailing beyond those latitudes toward the poles in the summer, it becomes navigators to be on the watch, lest they should be incommoded or lost among its drifting masses. Large bodies of it have been often met with in the northern parts of the Atlantic ocean. They are commonly seen in the month of June, from vessels sailing between the ports of the United States and those of Ireland, Great-Britain, or the more northern countries of Europe. Ships have sometimes been lost by striking against them. A few years ago a British packet from New-York perished in consequence of the shock she received by running against an ice-island. Other instances of like accidents are but too well known.

But the spring of 1805 offered something in the history of these moving islands of ice, that was not exactly conformable to ordinary experience. They had proceeded to the southward as far as the banks of Newfoundland early in April; and their numbers were greater than any person could remember, spreading over a vast field of ocean. And

that the subject may be the more clearly understood, I shall mention a few of the principal occurrences in relation to them.

The ship Citizen, Captain Hubbel, sailed from New-York, for the Texel, on the 11th day of March, 1805, and fell in with the ice to the eastward of the Grand Bank. She did not get clear of it for five days. The weather was dreadfully cold, and the sails were frozen as stiff as boards: one of the crew related that some of the masses of ice were apparently as large as Governor's Island, in the bay of New-York.

On the 6th day of April, Captain Law, in the ship Jupiter, bound from London to New-York, fell in with the ice in lat. 44° 20′ N. and long. 49° W. from Greenwich; it presented the forms of broken pieces, large floating islands, and immeasurable fields resembling continents. The ship, after every possible effort had been made to extricate her, at last struck with so much force against one of the solid islands, that she sunk with twenty people on board. She was enveloped in a thick fog.

Capt. Bennet, in the ship Oliver Elsworth, in a voyage from Liverpool to New-York, met with thick masses, and extensive fields of ice, in lat. 45° 46′, and long. 47° 0′, on the 7th day of April. It was so penetrable that the ship forced her way through a considerable distance of it, protecting her bows and bottom as well as could be by putting cables, spars and junk along side. The friction was so violent that the spars were ground to pieces; but after experiencing the most imminent danger, she got clear. The air was so thick with fog, that it was impossible to see twice the ship's length.

April 21st, Capt. Bool, on a voyage from Liverpool to New-York, got entangled in the ice in lat. 43° 20′, and long. 53° 18′. He struggled with it all the way from the western steep edge of the Great Bank to lat. 41° 50′, and long. 56° 5′, a considerable distance southward of the Porpoise Bank. The atmosphere was very thick with fog, and the weather intensely cold.

On the 25th April the ship Sally, Captain Bigby, bound from Charleston, S. C. to Greenock, with a cargo of cotton, was lost by striking against an island of ice in the night. The weather was foggy; her bowsprit and fore-mast were instantly carried away by the shock; the bows were beaten in, and the stem and several of the timbers started; in

about five hours the water filled her so that she sunk with a part of the crew. This happened in lat. 42° 30′, and long. 52° 0′.

The ship Hercules, bound from Philadelphia to Europe, encountered the ice on the 27th April. A curious extract from the journal of a gentleman who was a passenger on board, published at the time in the newspapers, gave a strong idea of the situations of this vessel, and of the prodigious quantities of ice which surrounded her.

A ship belonging to Boston, called the Morning Star, Captain Hopkins, from Bourdeaux, entered the ice on the 7th of May, in long. 45° 0′, and continued in it until the 20th, when she arrived at the eastern edge of the Great Bank. The latitude varied from 44° 30′ to 45° 0′. The ice was in enormous masses, and these numerous; the weather was extremely cold and foggy; it was at the same time very windy. Capt. H. never saw so much ice, though he has sailed between America and Europe pretty steadily for thirty-six years.

On a passage from Liverpool to Baltimore, the ship Oliver, Captain Richards, met with many large islands of ice as she passed over the Great Bank of Newfoundland; but she sailed through them without damage. This happened on the 18th, 19th, 20th, and 21st of May.

Between the 31st of May and 2d June, Capt. Thomson, bound from Londonderry to New-York, was entangled in the ice between long. 48° and 54°. His latitude was about 42°. As he sailed through, there was to all appearance as much ice south as north of the vessel. There was a very thick fog, and the temperature was intolerably cold.

During a voyage from Amsterdam to Boston, Captain Hillman, of the brig Union, saw ice on the 10th and 13th of June. It was judged to be eighty or ninety feet above water, and a mile in length.

Sailing from Nantz to New-York in the ship Missisippi, Captain Skidmore arrived among the ice on the 12th of June, and saw the last of it on the 14th. Her longitude, when she first met the ice, was 49° 30′, and 54° when she parted with it. Her lat. was from 42° 17′ to 42° 37′. The largest island was west of the Great Bank. He computed this to be more than two hundred feet above the water, and about a mile long. There the weather was cold and uncomfortable; and cool during the whole voyage.

Ice was seen by Captain Swaine, of the ship Perseverance,

which arrived at New-York; she crossed the Newfoundland station in about lat. 42° 0′, where the influence of the gulf-stream was supposed to be felt. She saw no ice; but first heard from the Block-Island fishermen the dangers and losses it had caused; but he experienced in his run rough boisterous winds from the N. W. and much cold until he approached the coast.

In the New-York Gazettes of June 26th, it was announced that the ship Iris, Captain Gross, on a voyage from Amsterdam to Baltimore, had put into New-Bedford for repairs, in consequence of damage done by the ice.

After a forty days passage from Liverpool, Captain Delano arrived at New-York in the ship Savage: he related that the first ice he saw was on the 3d of June, in lat. 43° 6′, and long. 45° 25′. It was a single island, that did not cover a great surface of ocean, but rose in a pyramidal shape, as high as the top-mast head. On the 4th and 6th he saw about half a dozen other islands as high out of water as the former. The last he saw was in lat. 41° 42′; the whole was to the eastward of the Grand Bank, and not nearer the gulf-stream than one degree by estimation.

To how much greater extent the ocean was covered by bodies of ice is uncertain. From the facts stated, however, it is clear that they bestrewed it so as to render navigation dangerous between the United States and the northern parts of Europe, from the 41st to the 46th degree of latitude, and from the 45th to the 56th degree of longitude; overspreading thus a tract of sea equal to five parallels of the former, and to eleven meridians of the latter. It was conjectured, with the greatest probability, that some of these ice-islands actually floated as far south as the latitude of New-York, Sandy-Hook, or even farther.

The effect of such extensive and numerous bodies of ice progressing slowly from the north, was so perceptible as to be a subject of popular remark, during the greater part of the spring and the beginning of summer. For although the winter of 1804-5 had been harder than any which had been felt in North-America since 1779-80, yet its severity had abated remarkably early. There had been some unusually warm days in March, and the river Hudson, which at Albany in common years is clear of ice by the 17th March, was in 1805, open at that city, and completely navigable to New-York on the 6th.

Yet notwithstanding this premature disappearance of win-

ter, the months of March, April, May, and part of June, continued sensibly cooler than usual. Still it was mostly that moderate coolness which was compatible with regular vegetation; while so small was the augmentation of heat, that until about the 20th of May, there was now and then a white frost in the morning, and fire was comfortable in parlours at the beginning and close of the day. During the whole course of this month, the highest ascent of the quicksilver was to 78°, and but few times to 75° at the warmest part of the twenty-four hours. During the last week in May, it had been as low as 67° at two o'clock in the afternoon, and 49° at six in the morning at New-York.

This remarkable coolness of the atmosphere was most evident when the winds blew from the north-east, east, and after the beginning of June from several points to the southward of east. Even south-east winds, and winds from the south, were considerably less warm than usual in June.

There could be no reasonable doubt that this particular temperature was caused by the unusually great quantities of melting ice, which had been detached from the places of its formation in the north, at least two months earlier than is common. The liquefaction of this ice, as it worked its way to the south, abstracted the heat from the surrounding air to so great a degree that it precipitated the water it held in solution in the form of visible vapour. The particulars of this phenomenon I have endeavoured to investigate by some experiments printed in the Medical Repository, Hex. i. vol. iv. p. 309, and by additional observations published in the same work, Hex. ii. vol. ii. p. 444. By absorption of the sensible heat of the water in which it floated, the ice also refrigerated the ocean, and lowered its temperature. These portions of cold air, when wafted to land, imparted to all the countries and tracts over which they blew, a portion of their chilling influence. During the first ten days of June, the chamber in which I usually sit, scarcely elevated the mercury above 65° at mid-day, while the winds from the N.E. E. and S. E. prevailed. In situations more exposed to solar influence, the thermometer indicated a heat several degrees higher. But on the morning of the 10th June there was a considerable white frost in certain low spots and vallies near New-York: early that morning stout labouring men complained of the chilliness as so troublesome, that beating their fingers and hands became necessary to warm them. The heat at my house rarely exceeded 75 or 76 degrees during

the whole month; and repeatedly the weather was uncomfortably cool when the sashes of the windows were raised.

However, it must be remarked, that this moderate temperature of the atmosphere was productive of luxuriant pasture; crops of hay were abundant; strawberries, cherries, goose-berries, currants and raspberries were seasonable and fine; the grain-harvest was plentiful, and hitherto showers of rain from time to time refreshed the earth; some of them were attended with much lightning and thunder.

Very early in July there were some intense heats. The winds came from the S.W. At Philadelphia, Albany, and other places, it was stated that the quicksilver rose considerably above 90 degrees. And although there were remissions of the fervour of the season, yet the remainder of it from the 4th of July, may be considered as remarkably hot; the winds blew more from the southward and westward. The ice was no more seen by navigators, and its influence was evidently at an end. A pinching drought succeeded, which withered the herbage, and almost ruined the pastures; crops of maize and potatoes were reduced to less than half their ordinary amount. Butter and fresh vegetables rose to very high prices.

These facts being stated, I return to a somewhat more detailed examination of the ice. This sometimes appeared in vast *fields* of such extent, that the mariner from the masthead could not discern their termination. This kind of ice did not always seem to be very thick, nor compact; it sometimes rose but a moderate height above the sea, and did not seem to sink far below its level. Though in many cases it was too solid to be penetrated by a ship, yet this might often be done, though with imminent and extreme danger. It seemed to be composed in no small degree of fallen snow-flakes, mingled with fragments of ice, worn off from the large and solid masses by attrition.

Many of the *islands* of ice were, as has been stated, astonishingly large; they may be estimated fourteen times the extent under water that they rise above it; this makes a mass projecting two hundred feet above the surface, to be three thousand feet thick. Whether this calculation is strictly true or not, it is certain that our Massachusetts fishermen have seen ice-islands aground in thirty fathoms water on the Bank of Newfoundland; and sailed around it as they would have steered in the neighbourhood of a rock. Notwithstanding the remarkable fogginess of the air, five, six or

more of such huge bodies might be frequently seen from a vessel at the same time.

The raw and chilling quality of the atmosphere in the neighbourhood of this floating ice, is invariably noticed by the navigators who have sailed among it. The prevalence of mist or fog on the land is very common when ice and snow, as they liquefy, refrigerate a warm surrounding atmosphere. Skilful mariners are, therefore, persuaded that a tolerable judgment may be formed of the approach of a ship to this drifting ice, by a proper attention to the coldness and obscurity of the air, in conjunction with a latitude, longitude, and season favourable to the congelation of much water; the ice too contains commonly a great quantity of light, and this light, when extricated, and reflected to the mariner's eyes from the clouds, gives warning of its proximity, by a luminous streak nearly as bright as an *aurora borealis*.

It is often asked, whence this uncommon and prodigious quantity of ice proceeded? There is one circumstance relative to it, rendering it highly probable that it came from the arctic sea, and regions of ever-during frost. The consideration is this: that these immense bodies are veined or streaked with zones or layers of transparent ice, white ice, green and blue ice, sleet and compacted snow, disposed one above another in such succession, and to such height as cannot be reasonably supposed to be the accumulation of one winter. They are manifestly the effect of many years congelation. In the course of ten, twenty, or perhaps an hundred years, or even more, such a composition may be formed from the ordinary freezing of water below, and from the addition of snow, sleet and rain, successively above. When such a pile becomes top-heavy, a fragment of it descending to the adjacent ocean may form an *ice-island*, if it is solid, or if softer or more friable, be spread over a large surface in the form of *field-ice*.

If thus it be admitted that this floating ice is too great in size and quantity to have been produced by the freezing of a single winter, but must have been the product of at least several years continual accumulation, it will be easy to show that it must have come from the latitudes of Greenland or Davis's Straits. This is evident from the facts that no continents of ice remain over the summer, either in the Gulf of St. Lawrence, the bays of Newfoundland, the shores of Labrador, or the recesses of Hudson's bay. During

the annual visit of the sun to the northern hemisphere, all these extensive coasts are cleared of ice by melting. None remains to be augmented by a succeeding winter. It must, therefore, be necessary to look to some more boreal region than either of those; in which the formation of ice is perpetually carried on, and the material when prepared, kept in vast natural magazines, to be detached occasionally, and transported to the southern latitudes.

These climates of unceasing cold are met with in Greenland. About thirty-five years ago, our Nantucket-men used to visit the island of Disko, in Davis's Straits, to get bone and oil from the whales frequenting that part of the sea. But since that time the passage between Disko and West-Greenland has been blocked up by the ice, and it has been impossible to enter it with a vessel. The ice has been so on the increase that they have deserted the coast. In like manner there is full evidence of the increase of ice from year to year for a great length of time along East or Old Greenland. Here it has made extensive encroachments upon the ocean, spreading over the water a firm and growing crust, and rendering the land in some parts inaccessible by ships; in short, blockading and depopulating the country. The operation of this increased cold, the greater obstruction of the Greenland seas, and the dreadful havock of hyperborean frost upon the climate of Iceland in modern times, have been often remarked by physical inquirers. It may hence be concluded, that the violence and continuance of the cold are sufficient in the polar circle to freeze the ocean, and overspread it with a thick and extensive covering of ice. And this encroachment seems in some instances to have extended a great distance from land. The same causes seem to have enlarged the quantity of it on shore, and thereby to have formed *ice-mountains*.

Under such circumstances it may be comprehended how a violent storm, or any unusual commotion of the ocean, may break up and rend asunder this northern continent of ice; and it may be conceived that the glacial summit of an overloaded mountain may rush to the sea and be wafted away.

Some of the ship-masters declared that on their passages from Great-Britain to the United States, they were assailed by currents and winds setting to the south-east. From this it may be inferred that the north-western spaces of ocean had undergone violent agitations. Some sweeping tempest in February or March probably separated some leagues of

the frozen margin from the shore, and set it adrift upon the wide expanse of waters. This large island would, in all probability, be soon cracked and split into smaller ones, by the motions of the billows; and by attrition much of it would be ground to inconsiderable pieces, or even reduced to a kind of powder or pulp. Its quantity would be increased by falls of snow. Thus would be formed *field-ice* and *mountain-ice;* the former melts first, while the latter for a much longer time resists the warmth of the more southern air and water. But on the present occasion, so cold was the northern atmosphere and ocean, that both kinds reached the Great Bank of Newfoundland in vast quantities.

For a further elucidation of this subject, I shall now refer to a few writers; and, to avoid trouble, I turn to those which are nearest at hand. And,

1. To *Forster's Observations made during a Voyage round the World*, Chap. ii. Sect. 6. Herein this author treats of ice and its formation; saying, it may be formed at sea if the weather is cold enough. He quotes Boyle, as saying, that one part in ten remains above water; Mairan, that only one fourteenth swam out; and Irving, as proving by experiment that fourteen fifteenths of ice sunk beneath the water level. He mentions a huge ice-island which grounded in the Straits of Belle-isle, continued a whole summer, and was not entirely melted before the summer of the ensuing year. He quotes abundant authorities to prove the congelation of the Euxine, the Baltic, the Great German, the Northern European, and Asiatic Oceans, to very great distances from land. It would seem, he thinks, that the ocean is sometimes frozen to the pole itself. When it breaks loose, it works along to the warmer latitudes, cooling the ocean and atmosphere as it progresses and liquefies.

2. To *Van Troil's Letters on Iceland.* In the second espistle of this collection, a melancholy account is given of the coldness of its climate, and of the damage done to the island by the ice drifting from Norway and Spitsbergen with easterly winds, and from Greenland by those from the north-west.

3. To *Pennant's Introduction to his Arctic Zoology.* In this work ice-islands are described of two hundred leagues in length, and sixty or eighty in breadth. He gives a very striking and animated description of the *ice-bergs*, which are true *glacieres* formed of snow and ice accumulating faster in winter than summer can thaw. All *Old* or *East Green-*

land ever since the beginning of the 15th century, has been blocked up by ice. This has been so permanent, that all approach of vessels has been prevented, and the colonies of European emigrants wholly destroyed. He says that the amazing *ice-blincke* in West Greenland, described by Crantz, is the source of much of the floating ice, which is carried about the ocean, p. 183 and 284.

4. To *St. Pierre's Studies of Nature*, wherein the author has treated ingeniously of the power of the polar ice, to cause by its liquefaction the tides and currents of the ocean.

It would be tedious to cite other authorities.

According to Dr. Franklin's and Captain Folger's remarks, the gulf-stream, in its most northerly extent (directly south of Nantucket) is felt in about lat. 38° 30′. The southernmost parts of Nantucket Shoals extend to about 40° 45′, or a little to the northward of New-York city.

This great current is found to reach about lat. 41° 20′ or 30′, to the southward of Sable-Island. Having reached this, its extreme northern direction, it changes its route, and runs towards the east, south-east, or south-east a quarter east.

To avoid the gulf-stream, therefore, ships bound from the northern parts of Europe are supposed to manage most skilfully in passing the Bank of Newfoundland somewhere in about lat. 44° 0′, the shoals of Sable-Island in 43° 0′, St. George's Banks in 40° 0′, and Nantucket Shoals in 40° 45′. By keeping this course the shoals are avoided on the one hand, and the adverse current on the other.

The gulf-stream thus extending north as far as 41° 20′ or 30′, and thus its extreme limit in that direction being south of Sable-Island, it can be understood wherefore the ice-islands do not get much to the southward of that latitude. This powerful current prevents their further progress to the south. Should they enter it, they would soon be carried to the eastward by its force, or be melted by its well known heat. But as it changes its course to the southward of east, after passing the meridian of Sable-Island, ice-islands may arrive as far south as 40°, or even beyond, to the eastward of that line.

If there was no such current in these parts of the Atlantic ocean, there can be no doubt that the ice would penetrate farther to the south and east. In that case the temperature of the atmosphere in the United States would be much more considerably affected by it than at present. It may

be also considered, that the arrival of the ice on the coast of the Atlantic States, and perhaps occasionally to block up Long-Island sound, by means of the eddy-current of the gulf-stream, is in some measure prevented by the discharge of waters from the Gulf of St. Lawrence, and by the shallowness of the Great Bank. The former aids the gulf-stream in carrying it to the eastward, and the latter arrests all the deeper masses which attempt to pass it; and thus the coast is kept clear.

From an attentive view of the foregoing facts and considerations, the inhabitants of the Atlantic coast of North-America may judge somewhat more particularly of the causes which modify the atmosphere they live in. Every body knows that heat is very unequally distributed over the surface of our planet. And the variableness of temperature in the atmosphere near the ocean, from the Chesapeake to the Gulf of St. Lawrence, is familiar to all the inhabitants. It appeared to me that the floating ice from Greenland had, on certain occasions, a perceptible operation on the climate, as far at least as the 40th degree of latitude. And a persuasion that the exhibition of these things would enlarge our knowledge of the atmosphere, assist in forming a theory of the winds, and do service to the navigation and commerce of the northern states and nations, induced me to attempt something upon the subject, and to offer my performance, imperfect and crude as it is, to the consideration of the curious, the learned, and the wise.

Account *of the* indigenous Origin *of* Chicken-Pox: *Communicated to the Editors by Dr.* Aaron C. Willey, *of Block-Island.*

I HAVE already noticed the domestic origin of Hooping-cough on this island in 1805 (Med. Rep. Hex. ii. vol. iv. p. 95.) The summer just past has afforded another instance of a similar nature. This is the domestic origin of the Varicella, or Chicken-pox. The disorder first made its appearance in a boy about the last of May. This boy attending a school, it was propagated among the scholars apparently by the common means of contagion. From this time it was prevalent throughout the island. But a number

of cases occurred during the summer which it was difficult to trace to any contagious source. That the first case originated without the aid of contagion is an indisputable fact. The boy had never been from the island, nor had any person come on it who was affected with the complaint. The weather was dry, and the atmosphere of a common temperature.

But this is not the first time I have known the chicken-pox to occur without the aid of contagion. In June, 1804, I was called upon to visit a young man who his friends were apprehensive had the small-pox. A bare inspection, however, of the case, enabled me to remove their fears, and to pronounce the disorder the chicken-pox; though I must confess the appearance was sufficient to justify the alarms of those who were not acquainted with the characteristics of the two diseases. The febrile commotion was such as to require a copious venesection; the pustules were numerous and well filled. Upon inquiry I learned that two children belonging to the same house, had been affected with an eruptive complaint a week or two before, which, according to description, appeared to be the chicken-pox. But whether it was or was not, is the same thing as respects its indigenous source. No other case occurred till the succeeding season.

It will be remembered that at the time these sporadic cases of chicken-pox happened, the hooping-cough was prevailing on the island. Now it is a well known fact, that no two epidemics of unequal force can long exist together in the same place. I think it highly probable that the varicellous disease would have raged generally the former season, had not the hooping-cough first gained such an ascendency as to prevent its predominance.

It will now sufficiently appear that not only the hooping-cough, but the chicken-pox can occur without the means of contagion. That there is a principle which is formed and exists independent of the laws of living matter, capable of exciting these two diseases, I think cannot be doubted. I am likewise of opinion that they seldom or never make their appearance in a country otherwise than as they are produced by this aerial virus; and that they are frequently generated in this manner in various parts of the globe.

From these facts I am inclined to believe that the measles and small-pox may arise from sources of a like nature. Indeed, the indigenous origin of the latter has been suggested

by some, but has been treated by others "as the reveries of inexperience and error;" but I hesitate not to espouse the opinion, ridiculous and absurd as it may seem to the minds of many.

A CASE *of* TETANUS, *consequent upon an Injury done to one of the* GREAT TOES, *and ceasing after Amputation of the wounded Parts, and the Use of Opium and Alkohol: In a Communication from Dr.* JEREMIAH BARKER, *of Portland, to Dr.* MITCHILL.

ON the 10th of August, 1805, at seven o'clock P. M. I was called to Mark Weeks, a labourer, aged 25, of a good habit, who was said to be in a fainting fit. He had been employed, during the day, in driving an ox-team, and loading of hay. About six o'clock one of the oxen trod upon his foot, which suffered great pain for a few minutes. The pressure was chiefly upon the great toe, over a boot, as he was standing upon hard ground. After the pain had subsided, he pursued his labour for nearly an hour, when his boot was hauled off, though with some difficulty. He then became faint and speechless. At this juncture I arrived, and, in attempting to give him some drink, found that his teeth were firmly set together, so that very little could be taken into his mouth, and none swallowed.

Upon examining his foot, I found that it was somewhat swelled, and the tendons of his great toe were sore to the touch, more especially the extensor. Upon pressing the nail, pain was induced, which, as he said, gradually extended up the leg upon the outside of the shin-bone, and soon reached the joints of his jaws. He made several attempts with his hands to open his jaws, but in vain. His pulse was full and strong. I took away a pint of blood, and applied an oily poultice to his foot; his jaws were bathed with oil and laudanum, and fifty drops of the latter, with some spirits, were put into his mouth, though scarcely any could be swallowed.

At eight o'clock Dr. Coffin arrived, who was also called, and we conferred together upon the propriety of amputating his toe. But, as it had suffered no apparent injury, we concluded first to try the cold affusion. Two pails full of water were accordingly poured upon his head and shoulders,

from a considerable height. This produced a chill, which was succeeded by a glow of heat. Half an hour after, when the heat had abated, 50 drops of laudanum, with an ounce of rum, were given, and he swallowed with more ease than before the bath, but his jaws remained immoveable; the dose was repeated at eleven, and he slept till twelve o'clock. At this time he awoke and complained of great pain in his toe, which extended up his leg and side to his left arm, which was thrust out to its utmost extent, and the hand clinched. The spine, at the same time, was bent backwards, so that he rested entirely upon the hind part of his head and heels. Friction with spirits and laudanum was then employed, and the spasms of his spine and arm subsided in a few minutes, but his jaws remained locked. A hundred drops of laudanum, with an ounce of rum, were put into his mouth, some of which he swallowed. He slept till three o'clock, when his toe again became pained, and the spine curved, but the spasms abated in a short time, excepting those of his jaws. He suffered several very similar attacks between the hours of four and nine, which produced great distress at the pit of his stomach, and tension upon the abdomen. During the spasms nothing could be swallowed, and very little in the intervals.

At nine o'clock A. M. Dr. Coffin was again called, and we agreed to amputate the toe. The operation was then performed just above the first joint. As soon as the toe was removed, he opened his mouth and asked for food, which he chewed and swallowed with his usual ease; the food consisted of bread and butter with tea. His jaw was relaxed, he said, as soon as the incision was made. The toe was examined, and no injury could be discovered, excepting that a little extravasated blood appeared under the root of the nail.

The patient remained easy till about four o'clock P. M. without opium or spirit, being rather drowsy. He then complained of pain in the stump, with a feeling, as he expressed it, as though his toe was on, and pulled downwards. The pain soon extended to his jaws, which were again closed, and his spine curved in some degree. I was then called, and gave 50 drops of laudanum in a glass of spirit, which he swallowed. The spasms lasted but a minute, after taking the dose, and when they subsided his jaws became perfectly relaxed. The duration of the spasms was about ten minutes. Some wine was given, but he said it

was not so agreeable to his stomach as rum. Fifty drops of laudanum, with two ounces of distilled spirits, were then directed to be given once in three hours, together with nourishing food. Linim. opodeldoc was frequently rubbed upon the affected side, from his neck to his foot, and the dressings of the stump were occasionally moistened with olive oil.

On the 12th he was free from complaints, having rested quietly the preceding night; pulse full, and vital energy uniform.

13th. He had suffered several attacks of pain in the stump of his toe the night past, which extended to his jaws, and as often rendered them immoveable, though for a short time; pulse feeble and mind deranged. Only half the quantity of opium and spirit prescribed, had been given since yesterday.

14th. He was free from spasms; pulse full, and mind rational. The medicine had been given as prescribed.

15th. Free from complaints; pulse strong and mind calm; the medicines duly given.

16th. I was called at six in the morning, found his pulse weak and tremulous. The spasms of his jaws and spine had been frequent during the night, and his mind was greatly deranged. Only twenty-five drops of laudanum had been given for twelve hours past! Fifty drops of laudanum were then directed to be given once in two hours, and two ounces of spirit. At 12 o'clock he was speechless, and death was thought to be depictured in his countenance. A Clergyman was requested to visit him, as despair of recovery had fully occupied the minds of his friends. At two o'clock I called, and, upon inquiry, found that he had taken scarcely any laudanum, and but little spirit for eighteen hours past, being dissuaded from their use by some officious visitors, who gravely insinuated that opium was a poison, and that rum would produce drunkenness, which, as he was about launching into eternity, would subject him to future misery. I then gave an hundred drops of laudanum in a glass of spirit. In less than ten minutes his speech returned with a firm pulse, and an energetic state of the whole system. His attendants were struck with astonishment at this unexpected event, and declared that they would no longer oppose the use of opium.

After this fifty drops of laudanum were given three times a day for about a week, with a suitable proportion of spirit.

He was no further molested with spasms till the 25th, when, by accident, he hit the stump of his toe against a post of his bed, which caused his jaws to lock and his spine to curve; but by the use of an opiate the spasms were removed in a few minutes. He had a good appetite, and his health was soon confirmed. During his illness he slept less than natural, and his bowels were occasionally moved with castor oil.

On the 11th of November following, the stump of his toe being healed over, he laboured a part of the day in cold wet ground, and felt very chilly. In the evening he was seized with pain in the stump of his toe, which, in a few hours, caused his jaws to lock and his spine to curve; I was then called, and employed pediluvium. The pain and spasms were then removed, but they returned upon taking his feet out of the water; fifty drops of laudanum were given with some spirits, and bottles of hot water were applied to his feet. The spasms soon subsided, and he rested quietly during the night; but the next day high fever came on, and delirium with pain in his limbs; pulse full and labouring. I then drew a pint of blood, which alleviated his pains. Soon after I gave four grs. of tart. emet. which produced five ejections. This was followed with ℈i of calomel, and ten grs. of colocynth. The fever and spasms then subsided, as well as the delirium. The day following he was distressed with some pain and spasmodic affection of his back, when opium and spirits were given to equalize the excitement. He was no further molested with disease. Since which he has enjoyed good health, in the employment of a stage-driver.

EXAMPLES *of the* ORIGIN *of* YELLOW *(and* NON-CONTAGIOUS) FEVERS *in various Parts of the State of New-York. By Dr.* JOHN G. SCOTT, *in a Communication to Dr.* MILLER, *dated March* 17, 1806.

BETWEEN the years 1792 and 1796, a gentleman began to erect a furnace and forge in the mountains, a few miles above Harverstraw, for which purpose he erected a dam across a large stream of water, and overflowed a large tract of land; he built small houses around it for his labourers, and was carrying on his work with vigour until autumn, when the heat of the weather dried his pond, and soon after his labourers were generally attacked with a very malignant fever,

which was so mortal, that most of them died; the remaining few fled, and since that time the work has been neglected on that account.

In the year 1797 several mills were erected in the town of Greenfield, and county of Saratoga, during the winter and spring, that caused much land to be overflowed with water, which in summer became dry. The ensuing autumn most of the inhabitants were attacked with a fever, that on its first appearance was termed bilious, not only because it was attended with bilious symptoms, but likewise because the common fall or bilious fever was prevalent at the same time in the adjoining settlements. This fever proved very malignant, carrying off whole families, bidding defiance to the effect of medicine; while the bilious fever in the adjoining neighbourhoods was managed with usual ease. It was attended with the same symptoms that characterize the present yellow or malignant fever in the city of New-York, except that many who died of it did not vomit; and of those that did, some vomited black, and others did not. The succeeding years the new ponds were emptied every May, and not filled till fall, and their malignant fevers visited them no more.

In the Genesee country, the land was very moist when covered with trees, and the first settlers were healthy; but when the trees were removed, and the soil exposed to the heat of the sun and influence of the atmosphere, it became hard and dry, and springs arose where there was no appearance of water when in a state of nature. The inhabitants became liable to severe attacks of a very malignant fever as the land was cleared, until the whole country became a scene of mortality, and many died vomiting black matter, in the greatest extreme of anxiety and pain; while others would walk about, saying they were quite well, until within a few hours of their dissolution. But after the land acquired a better texture, and vegetation was established and general, the country became more healthy, and, I presume, will in time become much more so.

In the neighbourhood of the medicinal spring, called the rock-spring, in the county of Saratoga, is a vast quantity of low, flat, moist land, which has been gradually clearing for several years; and the spring itself stands in a valley, whose bottom is entirely swamp, through which glides, easily and slowly, a considerable stream of water; and this swampy valley abounds with medicinal springs, all of the same quality, whose waters purge every one that drinks them, and

puke a majority, until they become accustomed to the use of them. The surrounding inhabitants are visited every dry hot season, with a fever that proves very mortal.

In the year 1804, a gentleman from New-York, improving a plantation up the North river as high as West-Point, on the east side, in the neighbourhood of some newly-erected mills, was under the necessity of discontinuing his work on account of a highly malignant fever that originated and prevailed in that place. And I can substantiate, by as good medical authority as this city can afford, that at least one of his people died of the same disease as the yellow fever of New-York.

In a settlement on the highlands of Orange county, called Queensborough, a highly malignant fever appeared in the year 1801. The situation of this place is so remote as to make it impossible it should be introduced by the arrival of a person labouring under the disease; and what made it still more impossible was, that it did not exist in New-York or Philadelphia at that time. This place is at least a quarter of a mile above the surface of the water in the river, which, when you once ascend it, makes the numerous hills around you afford a prospect almost like that of a moderately mountainous country; but in passing through them you frequently find yourself on the margin of a swamp, or pond of water without an outlet. Iron ore is also plenty and good throughout the highlands. On the margin of a large swamp, about the time of the commencement of the American Revolution, stood a large furnace for the purpose of extracting the iron from its ore, which was plenty in its neighbourhood; but during the Revolution it was demolished. The ore, is still dug and carted to the river. About forty rods from the ruins of this furnace is a spring that tastes strongly of iron, and vomits persons not accustomed to its use, and somewhat resembles the medicinal springs of Saratoga in taste. On this spot several miners lived, in little cabins built for that purpose: they were attacked with a disease of which the following cases will define the nature:

Conrad Schneffy, a German, lived immediately over, and wrought in an iron mine; his symptoms of attack were, full strong pulse, extreme head-ach, and pained joints, tongue covered with a dark yellow appearance, inflamed eyes, and constant sleeping. These symptoms he had without remission thirty-six hours when I first saw him. I took from his arm 28 ℥ of blood. He was likewise vomiting profusely when

I first saw him; and the most of what he threw up was tinged with streaks of blood. Immediately after bleeding, partial syncope came on, accompanied with increased vomiting. What he then threw up was a dark green; but the last of it always tinged with blood. After bleeding, the pulse never rose higher than natural, and a permanent perspiration ensued. I will here observe, that before bleeding, when under high febrile action, full sweat would burst from the pores, and continue for perhaps fifteen minutes, and disappear as suddenly as it appeared, without any alteration of symptoms, either in the pulse or the heat of the skin. During the thirty-six hours of unremitting febrile action, he had been entirely costive, but had passed urine freely, which was of a high brandy colour. Soon after bleeding I gave him jalap 12 grains, calomel 10 grains, to be taken in three hours. This was in the morning. Next day, late in the afternoon, I saw him again, and was told his purge had operated freely, and he said himself he was quite well; yet he vomited incessantly, emitting a dark-coloured fluid, which deposited a sediment quite gelatinous, and much darker-coloured than the fluid above it.

I now applied emp. episp. over the stomach, and ordered the saline draught every hour as long as the vomiting continued. It was thirty-six hours more before I saw him again, when Mrs. Parr (the woman attending him) told me the vomiting abated about six hours after the application of the plaster, but did not cease until she gratified him with a piece of chalk. His stools, however, continued black; his eyes, which at first had been highly inflamed, were now quite yellow; and the shirt he had taken off every day, was likewise yellow. I now ordered him to drink wine, which I impregnated with tr. bals. peruv. and to have an injection of chicken-soup, in which was put a tea-spoonful of tr. kino, to be repeated every two hours, and left him with a low slow pulse.

I did not see him again till forty-eight hours (the distance from my house being fifteen miles.) Mrs. Parr then told me he had talked much in his sleep the night after I left him, and was delirious at times next day; the last night he had been quite delirious and stupid, which continued when I saw him, and his aspect appeared like that of a person in a typhus gravior. He had vomited once in the forenoon of this day very plentifully, a dark fetid matter, and, when I saw him in the afternoon, and roused him, to get information from himself, he again vomited profusely. What he threw up

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exactly resembled what I see people throw up in New-York this year, when they are said to have the yellow fever. When I asked him how he was, he said, Very well; I asked him if he wished for any thing? he said, Yes, peaches. He had several days expressed a wish for peaches, and I had now brought him some very good ones, and put half of one into his mouth, which he swallowed with the most greediness I had ever seen any thing devoured by any animal. As he had had no stool the last twenty-four hours, I gave him a decoction of sen. fol. It operated moderately. He ate six peaches that afternoon, and died at seven in the evening. He never had any thing like an accession after he was bled and purged, but swet continually until he died, and some hours after, so that his sheet was yellow with it.

Mrs. Parr, his nurse, was taken ill a few days after his death, and had taken no medicine the first six days. The sixth day I saw her, and was told by those who attended her, that she had had no remission since she was taken ill. Her symptoms were the same that Schneffy had, but her pulse was by no means so full and tense as his was in the first stage. I gave her a purge of jalap and calomel, which operated only three times before nine o'clock, when she died. Her husband and two sons had the same symptoms, were bled and purged, and when the excitement fell sufficiently, they drank wine and brandy, and recovered.

Charles M'Auly, a native of Ireland. This man and his two companions lived five or six weeks in a small hut built on a little eminence in the middle of a swamp; their business was cutting wood and burning charcoal. They lived a mile from any other inhabitants, and seldom made their excursions farther than that distance, and never farther than the Hudson's river, which was four miles. They lived seven miles from Schneffy, yet still it was a continuance of the same mountains. He was taken with the same symptoms, and with slight delirium. A physician was called, who applied tinct. theb. and spt. corn. cerv. externally to his back and head, to relieve the extreme pain in those two places; he likewise gave a purge, but it did not operate. The third day from the attack I saw him, and took from his arm 24 ℥ blood, when the excitement fell sensibly, and his fever and pains, which had not remitted since the first, now left him, and he became perfectly easy and comfortable, and said he was quite well. A copious perspiration soon followed, and in two hours he began to vomit, and continued

to do so at intervals until evening, which was the period at which he was first taken. He was now seized with the cold stage of febrile paroxysm, which was followed by the usual succeeding symptoms, and terminated in an hour and an half from the accession; and as the fever abated, the vomiting returned. This he suffered two days; experiencing regular intermissions for two days more, when I saw him again. At this time he vomited up whatever he had taken into his stomach, and I observed that the last I saw him vomit was tinged with blood. His pulse was now low and frequent, his tongue almost clear, and no pains or aches, unless it was in the time of his paroxysm, when all his old pains and aches came regularly upon him, but left him as the fever abated. He would eat nothing but peaches, which he gathered from the tree himself, and would sit under the tree and eat them; but uniformly vomited them up again. I laid emp. episp. on his breast, and ordered him the saline draught every hour, and to drink Madeira wine plentifully: this last, however, was not complied with. On the seventh day I saw him again, when his pulse was very low and tardy; yet he had walked a mile that day, eaten some peaches, and returned. He was now also able to retain the peaches on his stomach. I was told he had been somewhat delirious the night I left him, during his paroxysm, and the last night more so; and I found the perspiration had continued during the intermission. I directed pulv. c. peruv. and port wine: this was at two o'clock P. M. at six in the evening his accession appeared, which was an hour sooner than usual, and at half past seven he breathed his last. A number of people in this vicinity were taken with the same symptoms, were treated in the same way, and recovered. The cases in all were about fifty, and about eighteen died. I can certainly see but little difference between this fever and that in your city this year, except that the latter extinguished life a day or two sooner. I likewise observed, that about the aforesaid mine and spring, the symptoms were more virulent, and the deaths proportionately more numerous; while people that lived in the vicinity of natural swamps and ponds had only a regular intermittent fever, but of the most obstinate kind I ever met with. Those who lived on dry land, abounding with mines, were attacked with ague and fever only; and those who lived on dry land, destitute of ore, were perfectly healthy, and their neighbours sickly in every direction around them.

I saw a person about this time who had been attacked with the aforesaid symptoms, but his physician had neither bled nor purged him, and his high febrile symptoms continued until within a few hours of his death, which occurred on the sixth day of the disease; when he seemed to show an excitability sinking under the weight of the highly-increased excitement.

Another person, about the same time, who lived nearly a mile and an half from the aforesaid mine, was taken with every symptom of a regular ague and fever, and took the arsenic drop at the request of one of his neighbours; the consequence was, the next two days he had no remission, and the third day he died under highly increased febrile action.

I once attended a woman, in the month of April, who was probably supposed to have taken arsenic in small and repeated doses. A person who lived in the house with her, had called at my house and got two drachms of arsen. alb. and the woman was taken ill next day, but grew better in the afternoon; next day she was taken ill again, and grew better towards night. Thus she continued, having ill turns every day or two days, for ten days, growing worse, and lying longer at each succeeding turn; and observed herself, when too late, that she always felt worse after taking a draught of sling or beer from this person, which he was very officious in giving her; he had likewise bought half an ounce of arsenic at another place the last week. I saw her at the end of two weeks, and found her pulse full and tense, her eyes red and watery, a violent head-ach, and pained back and muscles, a great oppression at the præcordia, and difficult respiration, frequent vomiting of a black-coloured fluid, and her tongue covered with a dark yellow fur. I took about 10 ℥ blood from her arm, and gave her pulv. rhei about twelve grains, and left her. That night, at midnight, I was called again, with the information that she had a convulsive fit, and was much surprised to find her pulse feeble, low, and frequent, which I had left strong, full, and tense. I was told her purge had operated only once, and that her friend had given her a drink of spirit sling; her pulse, however, was sunk, and I administered stimulants, which recruited her considerably, and next day she was better. A second physician was called, who prescribed for her in my absence, but she grew still worse, vomiting profusely and frequently a dark-coloured fluid. To him I communicated my opinion of her being poisoned, which he

acquiesced in, and she had a dose of flor. sulph. given her, and in five minutes she felt relieved of much of her oppression; the vomiting ceased, a perspiration came on, which was the first moisture of skin she had during her illness. Next day she took a drink of spruce-beer from her friend, and was taken worse instantly, and her illness now increased until she swelled much in her abdomen, and had several black spots, and died soon after, about thirty hours after she took the sulphur, during which time, at least after the beer, she had black stools. N. B. This country was remarkably healthy at that time.

I mention these two last cases to show the resemblance of the action of arsenic and malignant miasma on the animal system, and believe them alike in many ways. Like arsenic, it cannot be counteracted but by a subduction of stimulus; like arsenic, it makes rapid destruction of the excitability of the human system; like that, it causes palpitation and subsultus tendinum; and from every thing we know of the malignant miasma, it bears a striking resemblance to arsenic; and I believe, if it could be condensed so as to acquire a solid form, and be given in that form to any animal, it would extinguish life as soon.

As to the manner and place of the first cases of malignant fever in the city of New-York, during the summer of 1805, I am ignorant. Soon after its first appearance I had two cases, viz. Alfred Preston and Patrick Kelly. They both wrought in or about the place where the old coffee-house formerly stood. Preston was a very sensible, temperate young man, and allowed himself no indulgence in his leisure hours but that of sleeping in the dry shavings himself had made. He was a carpenter, and wrought altogether within doors at that place. He had visited no public houses nor any vessel; he much feared the yellow fever, and confined himself on that account. Patrick Kelly's character was exactly the reverse, but he had not been on board any vessel. Preston was carried to the marine hospital, where he died the next day, and Kelly recovered without any difficulty.

On the CHINESE SNAKE-STONE, *and its Operation as an Antidote to Poison. In a Letter from Mr.* WILLIAM H. HARDING, *of Virginia, to* DAVID HOLMES, *Esq.*

AGREEABLY to your request I make the following statement:—On Friday the 4th instant, I was informed my little daughter (about four years old) had been bitten by a mad dog. I saw the dog in the paroxysms, which discovered every symptom of madness, by biting at every thing which was within his reach, both before and after being tied. Certain that the dog was mad, I directed him to be killed. Being considerably alarmed, it was my own opinion that the child should immediately be put under a course of medicine; but my wife having heard of the stone in possession of the Rev. Mr. Lewis Chaustien, in Frederick county, insisted upon my carrying the child to him. I had frequently heard of the efficacy of this peculiar stone, but had not the smallest faith in any such cure; but in order to satisfy Mrs. Harding, I set out for Mr. Chaustien's with much reluctance, and arrived there the next morning. On my informing him my business, he immediately assured me I need not be under any apprehension for the safety of my child, as he would certainly cure her if she had been bitten by a mad dog, which would soon be known on the application of the stone. She had a cut on her arm near the elbow, which I knew to be occasioned by a fall; and in addition to a bruise she had two scratches on her arm. This circumstance afforded me an opportunity of making an experiment of the virtue of the stone, as I was informed the stone would adhere to no wound but the bite of a mad dog. I accordingly directed the stone to be applied to the wound which I knew was occasioned by the fall. Mr. Chaustien immediately informed me that the dog was not mad if she was bitten in that place, as the stone would not stick to it, consequently there could be no poison. The next application was to the scratch on the upper part of the arm. To this the stone would not adhere; but on being applied to the place where the dog was seen to have bitten her, the stone stuck fast, and continued there for eight hours, at which period it was taken off and another piece of the same stone applied, which, like the first, adhered to the wound, and so continued for the same space of time, when being removed, either the first small piece, or another (I am not confident which) was applied and conti-

nued about eight hours longer, making in the whole twenty-four hours; after which period the stone would no longer adhere to the wound. Mr. Chaustien then informed that he was satisfied that the child was out of all danger, and that the poison was entirely extracted, and that he would purge the stone. Accordingly he put the stone into a glass of hot water. In a short time a number of small bubbles began to rise, after the manner of quicksilver when struck, and a small scum, like oil of a yellow colour, tinged with green, appeared on the top of the water, which Mr. Chaustien informed me was poison. After the stone had been some short time in water, it was taken out and put into warm ashes to dry. Mr. Chaustien showed me a certificate which accompanied the stone, and called it by the name of the *Chinese Snake-Stone*, and which said that it came from Bombay in (I think) 1740. This certificate goes to show the efficacy of the stone for extracting the poison from bites of all poisonous snakes, and that many persons had been cured thereby.

On Mr. Chaustien's veracity I have the greatest reliance, having been acquainted with him several years. He told me he never had lost a single patient that applied to him, some of whom had the paroxysms of the hydrophobia on them at the time of the application, and that he had cured about eighty persons in less than two years. Mr. Chaustien said (as well as I recollect) that the first stone he acquired in the lower part of this state, accompanied by the aforesaid certificate, but by accident the stone got broke, perhaps by fire. He then heard of one in the possession of Mr. Joseph Fredd, of Loudon county, of whom he obtained a part. Fredd was in possession of a similar certificate, which was very ancient and much worn, so much as to compel Mr. Chaustien to reprint it.

The largest piece of the stone was procured from Mr. Fredd, and is about the length of the first joint of a man's thumb, flat, not unlike a narrow hone. The small pieces he makes use of for small wounds, and the larger for larger wounds.

Mr. Chaustien appears to be a very benevolent man, not desirous of making money by the stone, as in many instances he does not charge at all, and when he does exhibit a charge, it is so very low as to make him but a small compensation for accommodating his patients. I am so firmly convinced

of the virtue of this stone, that I do earnestly recommend to you, if you should ever be so unfortunate as to have any of your family in the same situation, to lose no time in applying to the Chinese snake-stone.

A CASE *of* RECOVERY *from the slipping of a* LEADEN BULLET *into the* TRACHEA, *and after the Performance of* TRACHEOTOMY: *Communicated to Dr.* MITCHILL *by* JOHN NEWMAN, *M. D. of Salisbury, (N. C.) in a Letter, dated December* 12, 1806.

THE following case, from its novelty and unexpected termination in perfect health, as well as from the singularity and danger of the surgical operation which the desperate state of the unfortunate sufferer rendered necessary, may not be unworthy a place in your invaluable Medical Repository; and I trust its history will not be unprofitable to the public, as it is known that many persons are suffocated by receiving substances into the *trachea* for want of the timely performance of the operation of tracheotomy; and, I believe, in the language of the great and benevolent Rush, "should this operation be more generally adopted in order to save life, it will not offer near so much violence to humanity as many other operations that are commonly performed by surgeons."

A few weeks ago a child of four years old, the son of a Capt. Cooke, of this county, being at play with his companions in a house where the family were sitting, and having in his mouth a leaden bullet, which had been considerably indented by the teeth of some of the children, accidentally passed the bullet with its rough surface into the wind-pipe, which instantly produced strong symptoms of approaching suffocation in the child, and which continued by spells, with a few hours remission, until the seventh day, when his parents applied to me for such aid as the case would admit of, and I might judge necessary and advisable, after having tried unsuccessfully every expedient that practitioners and others in the neighbourhood suggested. Their first application to me was at a late hour of the night, at which time the child appeared to have some mitigation in the symptoms of an obstructed *trachea*, except a lividness under the eyes,

which never disappeared, with other marks of approaching suffocation; such as a wild, distorted appearance of the eyes, a dark purple colour of the face, foaming at the mouth, gulping, croaking, and laborious respiration. The hour of night being now late, and the child appearing to be in no immediate danger of suffering a suspension of respiration, I deemed it most advisable to defer any operation that would be necessary until morning might afford us sufficient light, unless alarming symptoms should occur before; in which event I desired the parents to give me notice, so that I might attend and watch the progress of the symptoms, to enable me to judge of the situation of the bullet, and whether there was any prospect of removing it from the wind-pipe, and thereby preserve the life of the child. Respiration being very difficult during the night, the child rested badly; but not being so ill as he had been for some nights past, the parents and others that sat up with him did not think it necessary to call upon me, as they did not expect any operation could be performed before morning. After day-light the child was brought to my house, and appeared to be better than he had been during the night. Respiration being now performed more freely and easily than would have been supposed possible in such an obstruction of the trachea, I was induced to conjecture either that the bullet had been discharged from the trachea, or had lodged itself in one of the *bronchia*, and might possibly not rise again to impede respiration, and endanger the child's life, he having a longer remission in the symptoms than had happened before. The following expedient was then adopted to satisfy me of the situation of the bullet, viz. the child being suspended by the feet and legs, and his head and shoulders inverted, I agitated his body, and gave him repeated strokes on his back with my hand. In a few minutes the bullet was dislodged, and passed with considerable force (making a noise like that of a pop-gun), until we heard it strike the head of the wind-pipe. The face of the child immediately became purple, respiration laborious and very difficult, and other symptoms of strangulation so alarming as to excite apprehensions of a speedy dissolution of the child, unless the bullet could be removed from its present situation. Having my instruments and assistants all ready, I forthwith made an incision into the wind-pipe longitudinally, dividing four or five of its cartilaginous rings, and as near to the sternum as was considered safe, that I might the more readily raise

the bullet if it should again fall below my incision into its former bed. The child appearing to respire with less difficulty before my incision was completed, I was apprehensive the bullet had again fallen down by its own gravity. After completing my incision through the wind-pipe, I introduced a probe, crooked at the end, towards the lungs, with a view of searching for the bullet, which excited a cough, and seemed to give considerable uneasiness to my patient. I then withdrew my probe, and after suspending the child several times by the feet and legs, with the head and trunk inverted, the probe was again introduced, and passed up towards the epiglottis. After removing some obstruction which my probe met with at the head of the wind-pipe, I opened the jaws of the child and depressed his tongue, that I might observe whether the probe or bullet was visible in the fauces. On pushing the probe forward I could see its head and bent end very plainly, but could not see the bullet. I then withdrew my probe and placed my patient in as easy a situation as possible on the lap of his father, leaving the incision of the wind-pipe open, to the end that another search might be made for the bullet, in case there should be any reason to believe it was still in the trachea, and had not been pushed by the probe through the larynx into the œsophagus, and from thence carried into the stomach of the child. As my patient now appeared to respire very freely and easily, and to suffer no uneasiness except from a cough which attacked him at short intervals, and was always followed with a discharge of fœtid air and purulent mucus from the wound of the wind-pipe, I was soothed with hopes and the belief that the bullet had passed into the stomach; but as I was still uncertain whether the bullet was in the trachea or one of its ramifications, or had passed into the stomach after having been pushed into the throat by the probe, I was resolved to continue the wound open a few hours longer and wait the operation of a strong purge: I accordingly administered a dose of jalap and calomel, under an expectation (if the bullet had passed into the child's stomach, at the time mentioned above) that it would appear in the first evacuations from the purge. In a few hours after administering the purge, I had the satisfaction to see the bullet discharged with the first stool procured by the purge. After this much-desired event of seeing a bullet which had been the cause of so much anxiety and distress to the parents of the child and myself, I closed the incision of the

trachea with a few stitches and an adhesive plaster, and in a few days afterwards enjoyed the further satisfaction of finding my little patient restored to as perfect health as he had ever experienced in his life, without the smallest injury to his voice. In the same neighbourhood there have been two fatal instances of children passing small beans into the trachea.

HISTORY *of the* SYMPTOMS *and* TREATMENT *of an obstinate* HYPOCHONDRIAC MALADY; *to which is added an* ACCOUNT of a DISTEMPER *that prevailed in the Neighbourhood of Passamaquoddy-Bay in the Spring and Summer of* 1796: *In a Letter from* D. OWEN, *Esq. of Campo-Bello, to Dr.* MITCHILL.

HAVING perused a publication, wherein, with other gentlemen of the profession, you request a communication of facts, to form a basis for medical deductions, I thought it not inconsistent with your intentions to send you an account of the origin and progress of a nervous ailment, in the case of a sedentary person, together with the various treatment adopted by some of the most eminent physicians in England; whereby not only the bad effects of the rage of injudicious though *legal* prescription may be clearly inferred, but an argument also in favour of the idea of progressive disorder adopted, and likewise a strong persuasion be urged against systematic application of medicines without attention to the stage of the complaint, the occupation and idiosyncrasy of the patient. This account will be accompanied with the best statement I can give you of a general disorder, which affected the Bay of Passamaquoddy in the spring of 1796; and was, without doubt, the tail of that destructive comet which appeared at Philadelphia, and gradually extended its ravages northward, until its progress was arrested by the united resistance of climate and robust habits.

Account of the Origin and Progress of a Nervous Ailment, in the Case of a sedentary Person, with the various Treatment adopted by some of the most eminent Physicians in England.

In the year 1766 a young man, intended for the university, was inoculated with the variolous matter; and treated

according to the old method, then in practice in that part of England, where his parents lived. About the same season for three years successively, scorbutic tubercles appeared on his legs, which continued generally until the approach of winter, and then disappeared, without any particular treatment.

This circumstance afflicted him; and the more, because neither of his brothers, who were inoculated at the same time, had any such eruptions. At the age of sixteen he became pensive, and was affected with low nervous feelings.

To prevent the return of such eruptions, and alleviate the pensiveness, he had some medicines administered by the inoculator, and was sent to a public school. But the nervous ails were aggravated, and a violent pain in the right side took place, which ever afterwards continued. The eruptions never appeared as before.

From school he was removed to the university, where he studied with great application for near four years; avoiding all excesses of every kind. At the same season in one year of that period he was troubled with the angina maligna, which yielded to topical applications; and at the end of it afflicted with every nervous ail, dizziness, disturbed sleep, impaired memory, vapours, a reduced habit and enfeebled constitution. With these symptoms, in the spring of 1777, he applied to Dr. Fothergill, in London. This physician recommended a relaxation from study, country air, and exercise for a few months; and prescribed as follows:

℞ Confect. Damocrat.
Pil. Rufi.
— Gummos.
— Ecphract. } āā ʒj.
Syr. s. q. s. m. f. Pil. No. LX.
Sum. j vel ij horâ somni et primo manè.

℞ Tinct. Aromat.
Vin. Chalyb. āā ʒj.
Elix. Vitr. Acid. ʒj m.
Cap. gtts. xxx in Aq. Pyrmont. lbss primo manè et horâ undecima. J. F.

The apothecary who prepared the above substituted the syr. and conserve of hips for the warm opiate and syrup prescribed. The pills thus altered increased the flatulency, and the whole medicine was rendered useless.

The symptoms increasing, notwithstanding country air

and exercise, he was compelled, in August of the same year, to consult a country physician. He prescribed a few doses of pil. rufi with the saline mixture, and sea-bathing. The medicines abated the symptoms; but, from a month's regular use of sea-bathing and drinking of the water, the patient returned to the university, with the pain in the right side rather aggravated than diminished, and the nervous symptoms by no means subdued.

In the summer of 1779 he removed to London, for the purpose of proceeding to Lisbon, as a place fit for hypochondriac persons. Here the same apothecary who had prepared the prescription of Fothergill, observed that he had a scorbutic habit, which a small quantity of mercury introduced into the habit would remove. This aggravated the nervous symptoms, superinduced a laxness of habit, which, upon the patient's arrival in Lisbon, was followed by a diarrhœa with night-sweats. The cortex peruv. was now administered, and a bad habit superinduced. In the spring of 1780 the patient returned to England, his collegiate studies were again renewed, and continued till the summer of 1782; during this interval his mouth used to be generally covered with white mucus, and the nervous symptoms continued. He was again directed to use a very small quantity of mercurial unguent, and afterwards to bathe in the sea, which had cured many in like situations. The effects of this course are best explained by the following prescription, which, with difficulty, abated the febrile appearances which ensued on the approach of winter.

℞ Sal. Corn. Cerv. ℈ss.
Nitr. pur. ℈j.
Aq. Cinnam. Simp. ℥ ij.
Syr. Croc. ℥ ij m. f. Haust. 6tâ. quaque horâ sumendus.

℞ Philon. Lond. ℥ j.
Aq. Puleg. Simpl. ℥ vij.
Tinct. Card. ℥ ss m. cujus capt. coch. ij vel iij cum urgeat flatus.

Nov. 6, 1782. B. G.

℞ Rad. Valer. pulv. ℈ij.
Aq. Puleg. simp. ℥ ij m. f. Haust. bis die sumend.

℞ Camph. pulv. ℈j.
Sap. dur. et pur. ℈j.
Syr. ex Althæa q. s. m. f. Bol. quaque nocte sumend.

Nov. 9th, 1782. B. G.

The above medicines relieved the present symptoms; but the original ail remained. And in the beginning of 1783 Sir John Elliot was applied to. He observed that the liver was affected, and prescribed as follows:

℞ Sal. Absynth. ℈j.
Succ. Limon. rec. ℥ss vel ad plenam saturationem.
Sal. Polychrest. ℈ij.
Pulv. Rhab. ℈j.
Aq. Alexit. sp. ʒiss.
——simp. ℥xij.
Syr. ex althœa ʒj—m. f. haustus sub somni horam sumend.

Feb. 16th, 1783. J. E.

Pro Aqua Alexit. simp. substit. in haustu secundo,
Aq. Fontan ʒxiijss.
qui capiatur tertia quaque nocte.

Feb. 19, 1783. J. Elliot.

℞ Sal. Polych. ℈ij.
Pulv. Rhab. ℈j.
Aq. hordeat. ʒxv.
Syr. ex althœa. ʒj. m. f. haustus primo mane sumend.

℞ Sal. Absynth.
Nit. puriss. aā ℈j.
Sacch. alb. ℈ij.
Aq. font. ℥ij.
——Cin. simp. ʒiss.
Succ. Limon. cochl. ampliss. m. f. haustus in actu effervescentiæ sumend. horâ quaque 6ta. vel 8va. et tempore somni.

March 2, 1783. J. Elliot.

Upon appearance of apthæ in the mouth, the fig decoction was ordered for a gargarism, and the following:

℞ Ras. Lig. Guaiac.
Bac. Junip.
Rad. Sarsap. aā ℥ss.
—— Torment. ʒiij.
Fol. Senæ ʒj.
Aq. font. lbij coque ad lbj et cola: cujus capiatur dimidium primo mane, alterum meridie.

March 18th, 1783. J. Elliot.

This prescription removed the apthæ. The summer of 1782 was spent in the country. The pain in the side con-

tinued. In the beginning of 1784 the patient returned to London, when Sir J. Elliot ordered the following most singular medicines:

℞ Vitriol. cærulei gr. iv. cum q. s. pulv. Liquirit. diu teratur et perfecte misceatur; dein cum mucilag. Gum. Arab. fiat massa in pil. No. viij dividend. quarum una octava quaque horâ sumend. superbib. haust. sequent.

℞ Aq. Font. ℥ xiv.
Vin. Chalyb. gutt. xx.
Tinct. Amar. ℥ j m.
Jan. 10th, 1784. J. Elliot.

The above brought on violent pains of the bowels. The prescriber was forced to order

℞ Ol. Amygdal.
Syr. e Mecon. āā ℥ ss (cum mucilag. Gum. Arab. subact.)
Aq. Alexit. simp. ℥ iss m.
Jan. 12, 1784. J. E.

℞ Ol. Amygdal. d. ℥ ss (cum q. s. Gum. Arab. sub.)
Tart. Solub.
Tinct. Senæ
Syr. Rosar. sol. āā ℥ j.
Aq. font. ℥ xiij m. f. haust. ter in die sumend.
Jan. 13. J. Elliot.

Under the irritation of the above medicine, the patient, offended with Sir John Elliot, applied to Dr. Hugh Smith, who prescribed as below:

℞ Cons. Cort. Aurant. ℥ iss.
Rubig. Chalyb.
Cinnab. Antimon. āā ℥ ss.
Rhab. pulv. ℈ ii.
Spec. Arom. ℥ j.
Gum. Guaiac. p. ℥ ij.
Syr. simpl. q. s. f. Elect.
Sum. q. Nucis Moschat. mane et vesperi.

℞ Bals. Traumat. ℥ j.
Tinct. Aromat. ℥ iss.
Vin. Alb. Mont. ℥ j ℥ vj m. f. haust.
horâ 9na matutina, et 6ta vespertina sumend.

℞ Empl. com. cum Gum. ʒ vj.
——— Epispast. ʒ ij—super alutam extend. et lateri affect. applicand.
Jan. 16th, 1784. H. S.

It required the speedy exertions of John Jebb to alleviate the consequent symptoms; he ordered

℞ Liq. Anod. Min. Hoffman. gutt. xxxx.
Emuls. com. (cum dupl. quant. Gum. Arab. sub.) ℥ iss.
Syr. e mecon. ℥ ss m. sumat. cochl. ij urgentibus spasmis.
22d Jan. 1784. J. Jebb.

℞ Ol. Ricini.
Mannæ āā ʒ ij probe tritis adde
Aq. Menth. v. simpl. ʒ xij m. f. haust. bis die sumend.

℞ Gum. Arab. ℥ ij.
Aq. fluv. lbss—solve—sum. cochl. j in omni haustu supra præscript. si superveniat dysuria.
1st Feb. 1784. J. Jebb.

℞ Confect. Cardiac. ℈ss.
Sal. Corn. Cerv. gr. iv.
Tinct. Thebaic. gutt. viij.
Aq. pur. ℥ iss.
Sp. Lav. comp.
Syr. e Mecon. āā ʒ j m. ft. haust. horâ somni sumend.

℞ Pulv. Rad. Rhæi
——— ——— Colomb. āā gr. v.
Flor. Chamæm. pulv. ℈ss.
Aq. pur. ℥ iss.
Sp. Lav. comp.
Syr. Balsam. āā ʒ j m. f. haust. bis die sumend.
25th Feb. 1784. J. Jebb.

The irritation being removed, Dr. Jebb conceived the original ail to be in the liver, and prescribed accordingly; but nervous symptoms occurred, and opiates were used. Apthæ now appeared, which were removed by the following:

℞ Rad. Sarsap. ℥ j.
——— Bardanæ ℥ ss.
Ras. Lig. Guaiac. ʒ iij.
Uvar. pass. ʒ ij.
Aq. fluv. lbij—decoque ad lbj et cola—sumr. lbss bis de die.
March 29, 1784. J. Jebb.

The patient, now worn out with medicine, applied to Mr. Pott the Surgeon, who told him that the pain in the side was muscular, the foulness of the mouth scorbutic. He ordered the hot bath and cupping on the muscle affected, which relieved for a time; and then a small blister. The patient went into the country.

But in the country the usual restlessness prevailed. The blister was not made perpetual. He still corresponded with Dr. John Jebb, and in the summer received the following prescription for the ail as internal, and of the kidney with the liver:

℞ Pareiræ Bravæ ℥ ss.
Sal. Tart. ʒ j—decoq. in Aq. fluv. lbj ad ℥ xij et cola.

℞ Balsam. Traumat. ʒ j.
Vitell. Ovi q. s.
Liq. supra præscript. ʒ xiij.
Aq. Junip. comp.
Syr. ex Althœa āā ʒ j m. f. haust. bis die sumend.

℞ Ol. Ricini ℥ ss.
Mannæ ʒ ij.
Vitell. Ovi q. s.
Aq. pur. ʒ x.
Tinct. Sennæ ʒ ij m. f. haust. si alvus æquo astrictior fuerit sumend.

℞ Terebinth. Venet. ʒ iij.
Vitell. Ovi q. s.
Decoct. com. pro clyst. ℥ xij m. f. Enema urgente renali affectione infundend.

18th June, 1784. John Jebb.

The above prescription not relieving as soon as expected, the patient returned to London in August, when Dr. Baker and Dr. J. Jebb upon consultation ordered

℞ Lixivii saponac. ℥ ij.
Sum. cochl. minim. bis die in decoct. Althææ lbss.

27th August, 1784. G. B. J. J.

The soap lees before ordered brought on a costiveness. The patient again returned to the country. Again tried sea bathing alone, which had no good effect. Large quantities of sabulous matter, with the use of wild carrot seed, were discharged. The nervous ails increasing, the intestines became relaxed; he grew tired of the country, and proceeded for Lisbon, taking opium and castor oil occasionally.

The season being very warm, the pain in the side increased upon his arrival, and required some opening medicine. From Lisbon he proceeded for the baths called the *Caldas*, which had given relief in complaints conceived to be similar. Those waters, taken inwardly, increased the pain in the right side. The patient returned to Lisbon, and from thence to Bristol in England.

The Bristol waters had considerable effect. Apthæ appearing as before, with a flux of humours towards the mouth, a solution of borax with the essence of the woods was used. The nervous symptoms and flux abated, and after some months use of these waters, it was judged that the Bath waters would effect a cure.

The Bath waters did not agree. The patient therefore relinquished all medicine. The bowels appearing to be greatly injured, the pain in the side not subdued, he removed to a colder climate. In 1796 the nervous ails were increased to a violent degree. A fever was brought on by too much exposure and fatigue. Spasmodic affections seemed to indicate a termination of the scene; but the constitution again prevailed. No hæmorrhage at any time occurred, and the complaint progresses towards that point which hypochondriacs generally arrive at from natural causes, indicating at some periods a more speedy issue from a relaxation or abrasion of the viscera in general by improper treatment, an affection possibly of the liver, and consequent ill habit, beyond the power of medicine to prevent.

In the spring and summer of 1796, the inhabitants of the Bay of Passamaquoddy were generally affected by a disorder, which had not, at any time before, been experienced. It began to appear early in the spring, and did not entirely subside till the approach of winter. When it attacked any person in a house, it generally continued through the whole family, with various degrees of violence, according to the several ages and constitutions of the persons. In some few cases its progress was arrested by preventatives. The cattle did not entirely escape its influence. The general symptoms of the disorder were an excoriation of the various parts of the mouth, a soreness of the throat, breast, and stomach; a violent head-ach, with slow, irregular pulse, coughing almost to suffocation, vomiting, exhausting sweats, especially when that evacuation was indulged, and prostration of

strength, together with great difficulty of breathing in many instances; but no eruptions appeared.

Those who had only the first symptoms of excoriation and soreness of the parts to which the air had access, recovered generally in the course of a fortnight; using milk and other balsamic food of easy digestion, for few could masticate solid food. Plantain leaves were useful applications to the parts excoriated. Those who had also a headach, with slow pulse, and weak habit, had generally deeper putrid ulcerations, which yielded to the bark and camphor. In one family a girl of fourteen was seized with these symptoms: in the course of three days she was despaired of by her parents. There were putrid ulcers in her throat, her pulse was scarcely perceivable. The Peruvian bark was given in substance with some camphorated spirits, and a carrot poultice applied with goose oil and camphorated spirits, which restored her. Another young girl, in a different family, having similar symptoms, but no assistance, did not recover. The father and three other children, who had symptoms of the same ail, were directed to take a dose of bark with some camphor, and bathe a few times in the sea. They did so, and escaped lightly.

A neighbouring woman, who sometimes assisted the child, did not bathe nor take any bark. The putridity appeared in her mouth: she was restored by like application of bark, &c. The situation of the house was dry, near the sea, its aspect towards the north-west.

In a house similarly situated, eight children were seized; three of them required attention; there were no excoriations, but a great degree of soreness with the other symptoms. The one, an infant, would, after coughing, frequently be, to all appearance, dead; but in every such case, a small quantity of infusion of wood-root brought it to life. As the phlegm raised was very considerable, a weak solution of common salt in water, with small doses of rhubarb and egg-shells, was used occasionally, but with no permanent effect. Burdock leaves were then constantly renewed upon the hands and feet, stomach plasters applied, the body kept gently open with castor oil, rennet whey, or balsamic teas sweetened with honey given for drink, and in three months the child recovered. The other two, being loaded with phlegm, had gentle doses of tartar emetic, and afterwards some drops composed of camphor and nitre in equal portions, well diluted; but the effects were temporary. Blisters were

applied to the breast, and balsamic infusions, sweetened with honey, were liberally drank. In a few days they recovered, and by free air renewed their strength.

Nine children in a house similarly situated, were seized without symptoms of putrid excoriations. The oldest about thirteen. Their food was fish, potatoes, and bohea tea. Some of them had almost constant vomitings. They drank occasionally of bran infusion, sweetened with molasses, and by the approach of winter were all recovered.

The only instance I saw of real danger, without actual putridity, was that of a young man of twenty, who was advised to sweat out the disorder by good warm teas of summer-savory, and such like herbs. In five days he was reduced from great strength of constitution, so as not to be able to support his own weight. Small doses of camphor and nitre, with some antimonial wine, were occasionally administered, his bed clothes diminished, free air admitted, and half a pint of cow's milk drank warm every night and morning. On the 8th day he seemed a little recruited, his pulse raised; but his urine was high coloured, and seemed to indicate an ail of the kidneys, without any signs of breaking. Infusions of linseed and mallows, sweetened with honey, were ordered for common drink. On the 11th he had a small dose of tartar emetic, which cleared his stomach; and, on the 12th, the urine still continuing as before, a few ounces of blood taken from his arm. Soon afterwards the pain of his loins ceased, his urine broke, and in a few days he was perfectly restored by continuing the milk and exercise in free air.

It seemed to me evident, that a morbid condition of the air was the general cause of this disorder, which, in all instances, induced symptoms tending to putrescency, with various degrees, according to the age and constitution of the person. That the cold of winter destroyed the cause; balsamics sheathed its asperity; and the bark with camphor stopped its fatality. That blisters were generally useful; but that, upon the whole, nature was the most effectual physician.

Account *of an* Epidemic Fever *which prevailed at Bordeaux, in France, in the Summer of* 1804: *Communicated by* William J. M'Neven, *M. D. to Dr.* Miller.

I WROTE some time last year to Dr. Galway, a physician of learning and observation at Bordeaux, for an account of the destructive epidemic fever which raged in that city in the summer of 1804. You will perhaps think his answer worthy of your attention, as it furnishes a striking instance of the extreme virulence to which the bilious remittent may be exalted by the miasm of filthy sewers, exposed to a hot atmosphere, and in a high state of concentration. Subjoined is an extract from the Doctor's letter.

" I think I told you, when you were here, that the fever and ague, under all its varieties, is an endemic disease in Bordeaux. This is owing to the marshes that environ the city. The late Prefect, M. De la Croix, undertook to drain them; but the time of performing so useful a work was not the most happily chosen: it should have been executed early in spring, and not, as was done, in the greatest heat of summer. In prosecution of the plan it was necessary to open a great many sinks and water-courses that had lain clogged and stagnant for several years, and which ran through all parts of the city to the river. In the neighbourhood of these places the meat in the butcher's stalls was found to change colour, and become unfit for use much sooner than usual. The atmosphere was speedily so much vitiated as to give this endemic every appearance of the highest malignity, though its primitive character was nevertheless distinguishable.

" It set in with a general aching, a nausea, and chill.

" The cold fit varied as to its duration, and the hot paroxysm that succeeded was indeed terrible. The lips, gums, and tongue turned black, the patient became delirious, and many sunk under a profuse colliquative sweat. The pulse varied; in some it was high and quick, in others low. Numbers died before the fourth attack, and always with the sweat. The remissions seldom lasted longer than two hours; but the duration of the paroxysm varied, being sometimes of four, and sometimes of ten hours. Those who died seldom reached the sixth fit; those who escaped languished a long time before complete recovery; but if they relapsed they sunk under the sweat, and so reduced

was the vis vitæ, that immediate putrefaction followed death. Such was the general character of this fever.

" Fortunately for the inhabitants of the *Chartrons*,* the stagnant waters were drained from this quarter three years before; nevertheless, when the wind blew to us from the city four or five days, we were visited by the disease.

" I treated my patients in the following manner, and with the happiest effect. I generally began with an emetic of ipecacuanha, and as soon as could be afterwards, I ordered a gentle purge. During the remission a drachm of bark every hour; but where the stomach would not bear it in substance, I gave Huxham's tincture in a glass of red wine. During the hot fit I directed a camphor pill to be taken every three hours, and for common drink, equal parts of claret and water, acidulated with sulphuric acid.

" Some of our physicians and surgeons adopted this mode of treatment, and were afterwards well pleased that they did so. Others would not be beaten out of the French routine of tisans, bouillons, glysters and purges, and in the last resort a blister, but before it could take effect, the poor patient was generally swept off, and always dissolving in sweat. I never applied a blister, not even in those cases that were accompanied with delirium."

I met in this city with an inhabitant of Bordeaux, who lived there during the epidemic, and by whom I have been further informed that the mortality amounted for some time to upwards of fifty daily. The quarter called the *Department*, was deserted by all persons in easy circumstances, for here the disease raged with most violence. Now it is remarkable that in this neighbourhood the buildings are crowded, the streets narrow, and the level lowest; here of course the materials of the distemper would most easily accumulate.

* The most commercial quarter of Bordeaux, lying along the river, and at some distance from the old city. It is the residence of the Irish and American merchants.

Cases *of a* Division *of the* Uterus *into* two Cavities, *by Means of a* transverse Contraction *of it: Communicated in a Letter from Dr.* Chatard, *of Baltimore, to Dr.* Miller.

A LADY of this city, who, in point of fortune and education, holds the first rank in society, sent for me on the eleventh of last January, at ten o'clock in the evening, to obtain my assistance in quality of accoucheur, although she was yet only in the eighth month of her pregnancy. But the pains she felt, and which she found entirely similar to those she had experienced on former occasions of lying-in, led her to believe, and with good reason, that she was really in labour. My opinion soon confirmed that which she had formed; and the presentation of the child was found to be perfectly fair. I concluded that delivery would speedily be effected; and the more so, as the lady had always heretofore been favoured with expeditious and easy labours. But it was not till half past six o'clock in the morning, and after a great many very brisk pains, that she was delivered of a male child, of the ordinary size for her term of pregnancy. In making preparation to deliver the secundines, the form and great size of the abdominal tumour gave me suspicions of the presence of another child, and I consequently judged it prudent to ascertain the fact by examining the uterus. Nothing presented but the placenta, and I removed it with the greatest ease. Still, however, the large size and form of the abdominal tumour being very extraordinary, I again examined the interior of the uterus which I found entirely empty.

My engagements calling me elsewhere, I left the lady, with the intention of speedily visiting her again; for my persuasion not agreeing exactly with the result of my examination, I did not doubt that my attendance would become necessary for some purpose or other; and indeed my prognostic was just. The patient having some hours afterwards a renewal of pains, I delivered her at eleven o'clock in the morning of another male child nearly similar to the former. The extraction of the former placenta had produced no considerable hemorrhage, and that of the second was accompanied with the same success. The sequel of the case was as fortunate as possible.

Some practitioners admitting with M. Baudelocque a division of the uterus into two longitudinal cavities in some very rare cases, will readily account for the difficulty I experienced. But I can assert that this uterus seemed in every respect not to differ from others; and if my examination of it did not deceive me, it becomes necessary, in order to explain the facts, to suppose that the second child was situated in the upper part of the uterus, and separated from the former by a kind of circular contraction of it, which formed a division into two cavities, nearly resembling such as might be produced in a bladder moderately distended by air, and tied across the middle. In this case, therefore, the second child might not unaptly be compared to those encysted calculi which lithotomists have sometimes found in the urinary bladder.

The explanation which I have offered of the above-mentioned circumstances appears to me to be firmly established by the following case: Mrs. —— was delivered on the ninth of this month (September, 1806), at four o'clock in the afternoon, of a small child, at the proper term; and on the eleventh, at seven o'clock in the morning, my partner, Dr. Herwig, requested me to visit her, as she was then in labour of a second child, whose head had been presenting high in the pelvis since the evening before, without making any progress. In consequence of the extreme languor and debility of the patient, and the insufficiency of the pains, it was judged requisite to make use of the forceps. I succeeded, but not without some difficulty, in fixing the instrument with a proper degree of firmness; for the head being situated very high, and strongly locked in the greater part of its extent by a constriction of the body of the uterus, which, as in the former case, was divided into two cavities, it became difficult to gain such a hold for the blades of the forceps as to prevent them from slipping, although they had been well applied on the lateral parts of the head.

The extraction of the placenta of the former child had been made very easily; but that of the second, on account of the rupture of the cord, required the introduction of the hand into the uterus, and it was then that I had the opportunity to confirm my conjectures in the most satisfactory manner. My hand found ample room in the lower division of the uterus, where the former placenta had been attached; but it experienced much difficulty in gaining a passage through the contracted part, beyond which I discovered

another cavity, and in that the placenta of the second child, which was extracted very speedily and successfully. But I was surprised at the height to which I was obliged to carry my hand in order to reach the placenta, the whole of the fore-arm being necessarily introduced in order to accomplish the extraction. The mother and child soon recovered, and are now in perfect health.

REVIEW.

ART. 1. *The History of Mexico, &c. &c. By Abbe* D. Francesco Saverio Clavigero.

[Continued from Hex. ii. vol. ii p. 406, and concluded.]

AN apology may be expected by our readers for our long delay in finishing the review of this highly respectable work. For although our account of it was commenced in our Hex. ii. vol. ii. p. 282, and continued in p. 396 of the same volume, yet our press of materials has been such, that from that time to the present we have been unable to insert the concluding observations. We however seize the present vacancy to clear our file of the remaining paragraphs we had prepared, and which ought in justice to have been transferred to our pages at least a twelvemonth ago.

Having already submitted what we had to offer on the historical part of Clavigero's work, it now remains for us to take notice of the dissertations which he has added by way of appendix. These are nine in number, and occupy the greater part of the third volume. They were composed with the intention of illustrating the ancient history of Mexico, of confirming the truth of many points maintained in it, and of exposing the mistakes and calumnies of certain European writers, and especially Buffon, De Pauw, and Robertson, relative to the western hemisphere and its productions. In detecting their falsehoods and misrepresentations, the author has shown extensive knowledge. In the discussion he manifests all the superiority which might be expected from a traveller and a native above the speculative visions of persons, however respectable, who had never visited America, but who philosophized upon American affairs in the recesses of Paris, Berlin, and Edinburgh. In vindicating his country, he has shown no less acuteness in exposing, than boldness in contradicting their injurious aspersions. Like a man who equally loves the truth and the land of his nativity, he exhibits the uncandid conduct of those transatlantic writers, who, not content with indulging their vanity, that their own quarter of the earth transcended all the rest, were laboriously employed in vilifying and stigmatizing the regions on this side of the ocean. In per-

forming this service, he has offered so many proofs of their prejudice, narrow-mindedness and folly, that the American student ought to peruse Clavigero's dissertations before he reads a page of what has been written on his country by the Frenchman, the Prussian, or the Scot. By taking this preliminary step, our native inquirers will give a due preference to their native authors, and learn from them in the first place what degree of credit ought to be given to the works penned by strangers, about them, in foreign parts. We therefore consider ourselves correct in the opinion, that a perusal of the learned Abbe's dissertations ought to form an early part of an American education. For whether the student belongs to North or South-America, or is a Creole of any of the intermediate islands; in short, whatever may be his genealogy or descent from the people of either of the continents, or any of the islands beyond the ocean, he is equally concerned in obtaining a fair and true account of these modern colonies and settlements, and detecting the partial and ill-natured publications which have been made about them. And it is hard to say whether he can find a better guide than the erudite, judicious, and patriotic Clavigero, who will teach him to think and to feel like an American. The new world exults in having given birth to a man who has stood forth as her champion, and dared and defied the stoutest of her literary adversaries.

The first of these dissertations is on the population of America. The author is orthodox in tracing the whole human species from Adam and Noah. He thinks our continent began to be inhabited very early after the dispersion of nations, and at a time so remote, that the origin of the Americans is to be sought for in vain in the language and customs of the modern Asiatics. The passage from the north-west of Europe, and the north-east of Asia, is sufficiently easy. He thinks quadrupeds and reptiles may have passed partly by the same routes, and partly over land between Brazil and Africa, since overwhelmed by the waves.

The second is employed in settling the chief epochs of Mexican history. He thinks the Toltecas arrived in Anahuac A. D. 648, the Chechemecas in 1170, the Ottomies in 1220, and the Mexicans in 1245. And he compares the Mexican with the astronomical chronology.

The soil and land of Mexico are treated of in the third. He herein shows the improbability of that country having recently emerged from the waters, and contends that it has

never been submerged since the Noachian deluge. He proves that the climate is at least as good as in any part of Europe of equal extent; indeed, he avers that Quito, and the greater part of Mexico are far preferable. And in retorting upon the Europeans, he proves by historical facts, that however flourishing their quarter of the world may be at this day, it was originally inhospitable and scantily furnished with the good things of life, since it is indebted to Asia and Africa for the most useful plants and animals with which it now abounds.

He enters into a long and detailed discussion with Buffon, in the fourth dissertation, upon certain points of Zoology. In this he maintains that the indigenous Mexican animals possess their full share of vivacity and vigour, and that the animals imported from Europe have not degenerated, but in some instances have actually improved. In his catalogue of quadrupeds he has evinced a minuteness and extent of information which place him far before his renowned opponent. Buffon, as to Mexican affairs, is but as a schoolboy to Clavigero.

The physical and moral constitution of his countrymen is treated of in the author's fifth dissertation. In this he answers, with great force and spirit, the charges of mental and corporeal imbecility which had been generally made against the Americans. After having repelled and refuted their assertions, he demonstrates that the aborigines possessed excellent bodily and intellectual constitutions, and that the European emigrants degenerate by reason of their rashness, avarice, intemperance and crimes, and not by any necessary fatality in the climate. As an example of a sound mind in an American descendant from European parents, we would oppose the Abbe Clavigero himself to the ablest of the revilers of his countrymen and country.

The want of money among the Mexicans, and their ignorace of iron are considered in his sixth memoir. He shows from many facts in ancient history, that to be destitute of coins is no argument of barbarism; and he proves that the Americans had a kind of copper whose temper approached to that of steel. In the construction of boats and bridges, and in the calcining of lime-stone, they had made distinguished progress. And if they were ignorant of letters, their paintings and hieroglyphics were good documents of chronology and history. On the arts, languages, and laws of the Mexicans, the author has given ample informa-

tion, and subjoined a list of the Europeans and Creoles who have written on the doctrines of christianity and morality in the languages of New-Spain, and also who have compiled grammars and dictionaries of the same. On all these and other points he proves the weakness and futility of De Pauw's statements.

The boundaries of Anahuac are examined in the seventh, and the religion of the inhabitants is displayed in the eighth dissertation. In the ninth and last he treats of the origin of the venereal disease, or French evil, and proves, beyond any kind of doubt, as Becket and Ribero had done before him, that it prevailed in Europe prior to Columbus's discovery, and that the pretended importation of it from America is altogether unfounded and calumnious.—With about the same degree of truth and reason, it is now-a-days alleged, that America furnishes the *seeds*, and the *sparks*, and the *ferments* of yellow fever, which pure and healthy Europe only knows by importation!! It is to be hoped that the printing of tales in Europe about the introduction of lues and yellow fever from America will soon be discontinued; in Europe, we say, where both those formidable maladies existed before they were known among us. But we shall quote our author in the words of his translator, for his disquisition in opposition to the celebrated Astruc, a French physician, who may be considered as one of the most distinguished misleaders of mankind, not only on the origin of syphilis, but as to the contagiousness of plague, p. 416.

"During the first thirty years after the French evil began to be known in Italy, there was not a single author, as we shall mention afterwards, who ascribed the origin of it to America. All the authors who wrote upon it before 1525, and even some of those who wrote after, attributed it to different causes, the mention of which will excite the smiles and pity of our readers.

"Some of the first physicians then living, namely, Corradino Gillini, and Gaspare Torella, were persuaded, according to the ideas of those times, that the French evil was occasioned by the near conjunction of the sun with Jupiter, Saturn, and Mercury, in the sign of Libra, which happened in 1483.

"Others, in agreement with the opinion of the celebrated Nicolaus Leonicenus,* attributed it to the very abundant

* "Itaque dicimus, malum hoc, quod *morbum Gallicum* vulgo appellant inter epidemias debere connumerari... Illud satis constat, eo anno mag-

rains and inundations which happened in Italy that year in which the contagion began.

" G. Manardi, a learned professor of the university of Ferrara, ascribed the origin of the evil to the impure commerce of a Valentian gentleman, who was leprous, with a courtezan; and Paracelsus to the commerce of a French person, who was also leprous, with a prostitute. Antonia Musa Brasavola, a learned Ferrarese, affirms, that the French evil took its beginning from a courtezan, in the army of the French in Naples, who had an abscess in the mouth of the *uterus*.

" Gab. Fallopio, a celebrated Modenese physician, affirms, that the Spaniards, being few in number in the war of Naples, and the French extremely numerous, one night poisoned the water of the wells, of which their enemies were to drink, and that from thence the distemper arose.

" Andrea Cesalpino, physician to Clement VIII. says, he knew from those who were present at the war of Naples, when the French besieged Somma, a place of Vesuvius, where there is a great abundance of excellent Greek wine, that the Spaniards escaped one night in secret, leaving behind them a great quantity of that wine, mixed with the blood of the sick of San Lazaro, and that the French, when they entered that place, drank of this wine, and soon after felt the effects of the venereal disorder.

" Leonardo Fioravanti, a learned Bolognese physician, says, in his work entitled, *Capricci Medicinali*, that he was informed by the son of one who had been suttler to the army of Alfonso, king of Naples, about the year 1456, that the army of the king, as well as the French, becoming short of provisions from the length of the war, the suttler supplied them both with dressed human flesh, and that from thence sprung the French evil. The celebrated chancellor Bacon, lord Verulam, adds,* that the flesh supplied them was of men killed in Barbary, which they prepared like the tunny fish.

" As nobody knew, nor could know, who was the first in Europe that suffered that great evil, neither can we know the cause of it: but let us attend to what may have happened."

nam aquarum per universam Italiam fuisse exuberantiam . . . æstivam autem ad illam venisse intemperiem calidam scilicet & humidam, &c. *Opusc. de Morbo Gallico.*"

* " Sylva Sylvarum centur. 1. art. 26."

"To prove that the French evil could be communicated, by means of contagion, to Europe, from other countries of the same continent, it is necessary, but will be also sufficient to show that that evil was first felt in some of those countries, and that they had commerce with Europe before the new world was discovered. Both of these points shall be fully demonstrated.

"Vatablo, Pineda, Calmet, and other authors, have maintained, that among the distempers with which Job was afflicted, the French evil was one. This opinion is so ancient, that as soon as that evil appeared in Italy, some called it the evil of Job, as Battista Fulgosio, an author then living, attests.* Calmet attempts † to prove his opinion with a great deal of erudition; but as we know nothing of the complaints of Job, except what is mentioned in the sacred books, which may easily be conceived to speak of other distempers then known, or of some one entirely unknown to us, we can therefore build little on this opinion.

"André Thevet, a French geographer,‡ and other authors, affirm, that the French evil was endemic in the internal provinces of Africa, situate on both sides of the river Senegal.

"And Cleyer, first physician of the Dutch colony in the island of Java, says,§ that the venereal disease was proper and natural to that isle, and as common as the quotidian fever. Thuanus has affirmed the same thing.‖

"J. Benzius, physician to the Dutch in the East-Indies, testifies that ¶ that distemper was endemic in Amboyna and the Moluccas, and that it was not necessary to have any previous carnal commerce to catch the infection. This was confirmed in part by the account of the companions of Magellan, the first who made the tour of the world in the famous vessel *Victory*, who attested, as Herrera says,** that they found in Timor, an island of the Moluccan Archipelago, a great number of the islanders infected with the French evil; which was certainly neither carried there by the Americans nor Europeans, previously diseased.

* "In a work entitled, Dicta Factaque Memorabilia, lib. i. c. 4."
† "Dissert. in Morbum Jobi."
‡ "Cosmographie Universelle, liv. 1. cap. 11."
§ "Epist. ad Christ. Mentzalium."
‖ "Hist. Sui Temporis, cap. 71."
¶ "In Methodo medendi quo in Indiis Orientalibus oportet uti in cura morborum illic vulgo ac populariter grassantium."
** "Dec. III. lib. iv. cap. 1."

"Forneau, a French Jesuit, learned, accurate, and experienced in the affairs of China, having been asked by Mr. Astruc,* if the physicians of China thought the venereal distemper originated in their country, or brought there from other places; answered, that the Chinese physicians whom he had consulted were of opinion, that that distemper was suffered there since the earliest antiquity; and that the Chinese books, written in Chinese characters, which were esteemed by them to be ancient, said nothing of the origin of that disease, but make mention of it as a distemper very ancient even at that time in which these books were written; that also it was neither known nor probable that the distemper was carried there from other countries.

"Lastly, Dr. Astruc says, according to his opinion,† after having examined and weighed the testimonies of authors, that the venereal disease was not peculiar solely to the island Hayti, or Hispaniola, but also common to many regions of the old continent, and, perhaps, to all the equinoctial countries of the world, in which it prevailed from antiquity. This ingenious confession, from a person so well informed on this subject, and besides so prejudiced against America, as well as the testimonies above mentioned, are sufficient to demonstrate, that although we suppose the French evil to have been anciently existing in the new world, nothing can be adduced on this subject by the Europeans against America, that cannot be said by America against many countries of the old world; and that if the blood of the Americans was corrupted, as M. De Pauw would argue, that of the Asiatics and Africans was not more wholesome.

"Dr. Astruc adds, that from those countries of Asia and Africa, in which the French evil was endemic, it might be communicated by commerce to the neighbouring people, though not to the Europeans; because the torrid zone having been deemed uninhabitable, there was no commerce between those countries and Europe. But who is ignorant of the commerce which Egypt had for many centuries with the equinoctial countries of Asia, and on another side with Italy? Why, therefore, might not the Asiatic merchants have brought along with their drugs the French disease into Egypt, and from thence the Venetians, Genoese, and Pisans,

* "Dissert. de Origine Morborum Venereorum inter Sinias. Ad Calc. tom. i."

† "De Morbis Venereis, lib. i. cap. 11."

carry it into Italy, as they had for a long time a continual commerce with the city of Alexandria, in the same manner as other Europeans carried into Italy from Soria and Arabia, the leprosy and small-pox? Besides, among the many Europeans, who, from the twelfth century forward, undertook to travel into the southern countries of Asia, namely, B. di Tudela, carpini, Marco Polo, and Mandeville; amongst whom some, as M. De Pauw says, advanced as far as China, might not one bring with him on his return to Europe, the infection from those Asiatic countries? Here we do not treat of what actually did happen, but only of that which might have happened.

"The French evil might not only pass from Asia, but also from Africa into Europe, before the discovery of America; as the Portuguese, thirty years before the glorious expedition of Columbus, had discovered a great part of the equinoctial countries of Africa, and carried on commerce there. Might not some Portuguese, therefore, infected thence with the French evil, communicate it to his country people, and in course to other nations of Europe, as possibly did happen from what we shall say presently? Dr. Astruc may thus observe, by how many channels the French evil might be communicated to Europe without the intervention of America, although the ancients conceived the torrid zone inaccessible."

The author then goes on to treat of the improbability of its having been brought from Hayti by the Spanish adventurers, and proceeds as follows, p. 427.

"But although we should grant that those Spaniards who returned from the first voyage were infected by the French evil, we should still say, that the contagion of Europe did not proceed from them, according to the testimony of some respectable authors then living. Gaspare Torrella, a learned physician above mentioned, says, in his work entitled, *Aphrodysiacum*, that the French evil began in Alverne, a province of France, very distant from Spain, in 1493. B. Fulgosio, or Fregoso, doge of Genoa, in 1478, in his curious work, entitled, *Dicta Factaque Memorabilia*, and printed in 1509, affirms, that the French evil began to be known two years before Charles VIII. came into Italy. He came into Italy in September, 1494, therefore that evil was known ever since 1492, or at the latest in 1493, that is, some years before Columbus returned from his first voyage. Juan Leone, once a Mahometan, a native of Granada in Spain, vulgarly

called *Leone Africano*, in his description of Africa, written in Rome, under the pontificate of Leo X. after he was converted, says, that the Hebrews, when driven from Spain, in the times of Ferdinand the Catholic, carried the French evil into Barbary, and infected the Africans; on which account it was then called the *Spanish evil*. The edict of the Catholic kings respecting the expulsion of the Hebrews was published in March, 1492, as Mariana says, allowing them no more than four months to sell all their effects, if they did not choose to carry them along with them; and in the following month another edict was published by T. Torquemada, inquisitor-general, in which it was prohibited to Christians, under the heaviest penalties, to treat with the Hebrews, or to furnish them with provisions after the term prescribed by the king; so that all but those who became, or feigned to be Christians, were compelled to quit Spain before Columbus set out to discover America, as he did not weigh anchor before the 3d of August that year; the French evil, therefore, began in Europe before America was discovered. We find, besides, among the poetry of Pacificus Maximus, a poet of Ascoli, published in Florence, in 1479, some verses, in which he describes the *gonorrhœa virulenta* and venereal ulcers which he suffered, occasioned by his excesses."

But for a full refutation of all that has been alleged against the Americans as the fathers of the pox, by Astruc, Oviedo, De Pauw, Robertson, and the rest of the writers of this class, we must recommend to our readers a careful examination of the dissertation itself.

ART. 2. *Electricity, or Ethereal Fire, considered, naturally, astronomically, and medically; comprehending both the Theory and Practice of Medical Electricity; and demonstrated to be an infallible Cure of Fever, Inflammation, and many other Diseases; constituting the best Family Physician ever extant. By* T. Gale, *M. D.* 8vo. pp. 276. *Troy.* Moffitt *and* Lyon. 1802.

ALTHOUGH several years have elapsed since the appearance of the present performance, it has but lately come into our hands. It is, however, not a mátter of very deep regret that it has been out of our power to notice it

sooner. The tract comes from one of those zealots in physics who ascribe almost every phenomenon in nature to the operation of electricity. Accordingly the author treats of it as the supporter of animal and vegetable life, as the cause of gravitation and motion in the universe, and as an auxiliary to the physician in the cure of diseases.

For the review at considerable length, of a book, having a resemblance in its great outlines to the present, we refer our readers to our Hex. i. vol. iv. p. 275. In the remarks there offered upon Dr. Young's hypothesis of the universal electrical, and all-surrounding atmosphere, the action of this atmosphere upon the body of the sun, and through this primary orb upon all his followers is comprehended a summary of the Hutchinsonian or anti-Newtonian Philosophy. We see no necessity of repeating the sentiments then delivered. For as Dr. Gale has adopted an electrical hypothesis, not materially differing from that of Dr. Young, and as the analogy between it and the doctrine of Hutchinson is already in the possession of those who have the volume before referred to, we consider the subject as discussed by us long ago.

There is a further reason why we do not at present go more profoundly into this grave argument, and that is, because the author's opinion, *that the sun of our system possesses the qualities of electric fire* (p. 32), has already been discussed at great length in our Hex. i. vol. v. p. 165 et seq. in the review we gave of Judge Woodward's publication *on electron, as being the matter constituting the substance of the sun.* To that ample exhibition of this notion, we beg our readers will turn, and spare us the trouble of bringing before them again a subject treated of at such great length.

In the first, or astronomical part, we find many things roundly asserted, which stand in need of proof to render them credible. There is a great deal of reasoning and but little logic or conclusive deduction. There is a remarkable pretension to sagacity in Dr. G. beyond all other writers, for which we really are unable to discover the cause. He flatters himself that he looks further into the arcana of nature than the wisest of his predecessors, though we are unfortunate enough to differ from him in opinion. That this should be the case, will not probably be a subject of surprise, when the following quotation is read (p. 60): "It will appear sufficiently evident that the great Architect of the universe hath poised the whole conglomerated cluster of suns

and systems upon this single, latent, mysterious agent called electricity, or ethereal fire; that by one form of it, all the other elements are locked as in eternal ice; by another they are again liberated and put in motion; by one form of it a tour of flight is prepared; and by another they are impelled to pursue that passage; by one form of it they press towards a centre; and by another they are compressed or repelled from that centre," &c. Now, it seems evident that with such assumptions of principles as these, and such a lax method of making deductions from them, there would be no difficulty in proving the moon to consist of green cheese, to reconcile all the apparent difference between fire and frost, or any other thing equally curious and entertaining.

The author has several peculiarities of diction, of which we notice a few instances. The word *effluvia* is constantly employed as a singular noun, "the electrical effluvia *is* far more subtil," &c. "*this* electric effluvia," &c. "*Flamum-fusion*, that is, fusion with or in flame," (p. 30). Insolation throughout the book, for ins*u*lation; although the former word signifies exposure to the rays of the sun, instead of being placed on the electrical stool, (p. 82 et ubiq.) *Malgam*, (p. 256) repeatedly for *a*malgam. He makes his effluvia a feminine noun, "having briefly stated the powerful agency of *this* hidden effluvia, and considered *her* various forms, states and defects, let us now apply *her* laws," &c. (p. 37). The sun is also treated as of the same gender. *She* and *her* are often employed in mentioning the luminary of day, (ibid.) This would be correct in German, where the sun is feminine and the moon masculine, but is not conformable to the English mode of expression. We cite these passages, however, less for the sake of literary criticism, than to give an idea of the author's way of thinking and expressing his ideas. He is exceedingly ardent in some parts of his astronomical chapter, where he spiritualizes his doctrine of electricity, professes his belief that the millennium is near, and declares that he published his book under the influence of heaven. We learn from a perusal of it, that Dr. G. is the person who, in the disastrous year of 1798, visited the city of New-York, and offered his services to the public for the cure of the yellow fever by electricity. He relates several cases treated with this remedy, in the city and at Bellevue Hospital. Though he is fully confident of its good effects, he has not been fortunate enough to convince his fellow citizens that it is worthy of the reliance he

places upon it; and he hints very plainly in his preface, that diseases would yield so readily to this ethereal and divine medicine, that patients would be restored to health too soon for the profit and importance of their physicians; and therefore, these cunning rogues of practisers stick to their old prescriptions, and their Materia Medica, as the shrine-makers of the temple formerly adhered to the goddess Diana. We doubt, however, the propriety of this reflection upon the gentlemen of the faculty; for if the distemper raged in 1798 without any sensible or known controul from Dr. G.'s electrical apparatus, although he was personally there to apply it, wherefore ought he to censure his medical brethren for doubting its powers, and for administering preferable remedies? But this is not the first instance of zeal trespassing upon the bounds of liberality.

After what has been offered, our readers will naturally conclude that this medical electrician possesses somewhat of the dogmatical and dictatorial spirit natural to men who mean well, and are positive that they are right. With his machine and its appendages, he is ready to contend with almost all forms of disease, and dispel them by arts, which, if they do not savour of the horrible, have at least something very *shocking* in them. Fever, peripneumony, pleurisy, St. Anthony's fire, inflammatory rheumatism, and sore throat, small-pox, measles, madness, ague, St. Vitus's dance, hysterics, epilepsy, consumption, palsy, dropsy, gout, dysentery, colic, asthma, diabetes, suppression of urine, obstructed menses, king's-evil, cancer, quinsy, vertigo, headache, deafness, inflammation of the eyes, films, gutta serena, cataract, fistula lachrymalis, hæmorrhage, piles, ulcers, abscesses, rickets, lock-jaw, bruises, sprains, whitlows, stitches in the side and pains in the back, wounds, drowning, suppressed perspiration, burns and scalds, are some of the maladies for the cure of which the author recommends his highly-diffusing and all-prevading agent. For the particular observations on each of these, as well as for his practical trials, we must refer to the third Chapter of the book, (from p. 97 to 241) where they who desire to examine the success of his diversified and extensive use of this valuable remedy will be fully gratified. We certainly caution them against conceiving any dislike to an excellent thing, on account of the extravagant and hyperbolical praises which have been bestowed upon it by one of its over-anxious friends. We do not see any thing very memorable among his directions

for applying electricity in his second chapter, nor in his instructions for constructing machines in the fourth. We, therefore, forbear to trouble ourselves or our readers with further remarks.

ART. 3. *Plain Discourses on the Laws or Properties of Matter: containing the Elements or Principles of Modern Chemistry; with more particular Details of those practical Parts of the Science most interesting to Mankind and connected with Domestic Affairs. Addressed to all American Promoters of useful Knowledge. By* Thomas Ewell, *M. D. of Virginia, one of the Surgeons of the United States Navy.* 8vo. pp. 469. *New-York.* Brisban *and* Brannan. 1806.

THE attempts to simplify, facilitate and diffuse the knowledge of chemistry form a conspicuous feature in the learning of modern times. All literary nations can now exhibit productions of this kind, and in most of them a considerable number and variety may be found. Some of these publications are chiefly elementary and compendious, while others pursue the subject into more minute details, and are extended to a wider range. The greater number are devoted to scientific views, and designed to assist the studies of the learned reader; but not a few are intended for popular use, and presented in so familiar a manner, as to bring chemistry home to the business and various employments of common life.

Considering the number and excellence of the publications on this subject already extant in our language, drawn up in all the variety of plans which have been stated, and considering that all of them must of necessity deliver nearly the same principles in a more expanded or condensed point of view; it may perhaps be justly doubted how far any addition to the number, without much addition of new matter or of important improvement, can be likely to subserve the interests of science. The public complain, and no doubt with much reason, of the accumulation of books beyond the real necessities or substantial advancement of knowledge. We are well aware that the speculations of authorship and the trade of book-making constitute one of the grievances of modern literature; and that much of what daily issues from

the press may, without hesitation, be pronounced to deserve more the frowns than the indulgence or encouragement of the community.

But for ourselves, we cannot conceal our gratification at seeing an attempt by one of our enterprising countrymen to frame a system of chemistry. With the allowances which liberality will induce every reader to make for the oversights which it is difficult to avoid in a performance of such extent, we are sanguine in the belief that this work will promote the cultivation of this branch of science in the United States. The influence of national, and even of provincial partiality, is in some respects laudable, and is often observed to operate with powerful effect. On this principle many of our fellow-citizens may be induced to open the volume before us, and peruse its contents with a warmer interest. Every man of a liberal education and scientific pursuits, and especially one of such promising hopes as our author has already induced us to cherish, has a circle of acquaintance and friends who will avail themselves of his labours, and gladly accept any instruction he may be induced to offer. By such means as these, many persons are allured to the love of study and the cultivation of branches of learning, which otherwise might never have gained their attention.

Dr. Ewell's arrangement of the matter contained in this volume does not materially differ from that of other chemical writers. He divides it into fifteen parts, which he calls *Discourses*. In an introductory address, he gives a comprehensive view of the objects and relations of chemistry, and of its extensive utility and importance. The first discourse contains general remarks on the science, and a particular account of heat. The second discourse is devoted to the consideration of light, electricity and galvanism. The third treats of the atmosphere and of water. The fourth is assigned to carbon, sulphur, phosphorus, and the muriatic, boracic and fluoric acids. The fifth concerns the alkalies, ammonia, pot-ash and soda. The sixth enumerates and distinguishes the elementary earths. The seventh exhibits the general properties of metallic bodies, and gives an account of several of them. The eighth pursues the subject of the metals, and completes the account of the remainder. The ninth treats of a number of the productions of the mineral kingdom. The tenth contains general remarks on vegetable substances, their composition and principles. The eleventh continues the subject of vegetables,

and pursues it into a variety of details. The twelfth respects the nourishment and growth of vegetable bodies, and presents various theories on that subject. The thirteenth treats of animal substances and their different constituent parts. The fourteenth is employed on the several fluids of animals, their composition, qualities and uses. And the fifteenth considers the substances which nourish animals, and the progressive changes which such substances undergo in the process of digestion and nourishment.

As the greater part of this work does not materially differ from the other chemical publications which are now in general use, it cannot be expected that our quotations should go to any great length. We think it proper therefore to confine our selections to passages in which Dr. Ewell dissents from common opinion, or substitutes for the prevailing doctrine conjectures of his own or of others.

The opinion of Dr. Black concerning heat is opposed in the following manner:

" Before dismissing the subject of heat, it will be proper to notice an opinion delivered by the great Dr. Black, which has since his time been published in all the systems of chemistry, as if its truth had been established. The doctor was the first who noticed the fact, that when substances were changed from the solid to the fluid, and from the fluid to the aeriform state, generally they absorbed sensible heat, or rendered it latent. Also, that when airs or fluids were rendered solid, they gave up sensible heat. Not satisfied with this important discovery, he and all the chemists since his time have stated, that the *cause of the solidity is the loss of heat*; and that the *cause of the fluidity is the union with heat*. Hence he calls the latent heat *caloric of fluidity*. This appears to me, for several reasons, an erroneous doctrine, or rather assertion. An incidental circumstance, the absorption of heat, which must proceed from a capacity in the body *previously* acquired, is considered as the *cause* of the new properties of fluidity, &c.! What must have given the body a capacity for heat? And why may not the cause which gave the capacity, be the cause of the fluidity? The doctor's opinion must appear erroneous from the facts, that the fluidity of bodies is not proportionate to the quantity of latent heat; and that their solidity is not proportionate to the loss of heat. A few experiments will show these truths. If on a piece of chalk you pour sulphuric acid, immense quantities of air will escape, although no absorp-

tion of heat or coldness will be produced. If charcoal be burnt in pure air, great quantities of heat will be set free; yet the air formed during the combustion is as fluid as the air which disappeared. Nitric acid, in a strong heat, is converted into two airs of great bulk, which contain no more latent heat than the acid did. On adding salts to water, great quantities of heat are absorbed, yet the fluidity of the whole is not increased. When water is made solid by freezing, but little heat is extricated; yet, when it is made solid by an union with quick-lime, as in slacking lime, then much heat is extricated. When we bring two airs together, the ammoniacal and the muriatic, they form a solid, yet throw out no heat. These and other similar facts, justify the conclusion that solidity and fluidity do not, as Dr. Black supposes, depend on the quantities of latent heat.

"After considering this subject, I am decidedly of opinion, that the fluidity and solidity of substances depend on the same cause which varies their capacities for heat; and this is *the exercise of the particular affinities of the body, in the circumstances existing in the different degrees of heat.*

"If this be admitted, we shall no longer be surprised at the above facts I have mentioned, nor at the following: that water, while freèzing, has its bulk increased, although it parts with heat; and that iron, bismuth and zinc, when melted, and some clays in strong heat, really contract in bulk. Nor should we be astonished at any of the effects which take place, as they all proceed from the exercise of the affinities of the bodies in the states created, the nature of which we can only learn by experience."

The following remarks are offered concerning electricity:

"The same doctrine that was delivered concerning heat and light, should be extended to electricity. We, therefore, must observe, that some bodies have a *capacity* to unite with it, and render it *latent*, from which state it may be converted into *sensible* electricity, by mechanical and chemical means. When converted in large quantities in the sensible state, it makes its escape so rapidly, as to occasion sometimes the loudest noise, or claps which every one has heard.

"If the doctrine I have delivered concerning electricity be correct; if it unite to bodies and become latent, as heat and light, chemical changes in substances would naturally produce alterations in the capacities of bodies for it, as well as in their capacities for heat and light. Accordingly this

appears to be the case in some instances, although generally the escape of the fluid cannot be detected, as it flies off gradually. Lately it has been found, to the great astonishment of European chemists, that sulphur (which is electric, or contains a great quantity of electricity in a latent state), when melted with copper or iron in a Florence flask, from which all air is excluded, unites to the copper, and appears to burn. About the bottom of the mixture, a sparkle appears which expands over the whole, giving it the appearance of blazing. This sparkling and blaze, no doubt, arise from the escape of the latent electricity of the sulphur, which is set at liberty on its chemical union with the metal. The sparkling of the water of the sea, of red-hot metals, and of some other bodies, very probably depends solely on the escape of this fluid. It also appears to me exceedingly probable, that the frequent and great collections of *sensible* electricity in the clouds, noticed during storms, arise from chemical changes in the air, whereby the capacity of the air to retain the latent substance is lost. An union of the air with water, and with other substances, may no doubt produce the changes causing alterations in the capacity of the atmosphere for the latent electricity."

Dr. Ewell states a number of objections to the prevailing opinions concerning vegetation, and proposes to consider the subject in the following point of view:

"In the course of this work I have stated, and it will be believed by all who examine, that not only heat, light, electricity and galvanism, create states in which the affinities of the particles of matter are variously exercised, but that *other bodies* have sometimes great influence in creating states for the exercise of the affinities of matter of a different kind. Hence you may put two compounds together of a particular kind, and no action will ensue unless water be added, which, when done, new affinities are exercised, and the water remains unchanged. A number of similar facts might be mentioned. The observation before made may be here repeated, namely, that although we cannot say in what a state for the exercise of the affinities of matter consists, yet it no doubt depends on a *mechanism*, or mechanical arrangement of matter which cannot be described. A variation in the mechanism of a body would naturally lead us to suspect that there would be a variation in those affinities of a compound which were exercised in the first state.

"Aware of these considerations, or principles, the changes

occurring in vegetable juices can no longer be mysterious. Throughout every part of every plant there are pores, or vessels: and in almost every part there is a difference in the mechanism or arrangement of these vessels. Inasmuch, therefore, as we find a difference in this mechanism, should we be led to expect a difference in the affinities of the matter exercised. Accordingly we find that the compounds existing in the different parts of plants do vary as much as their mechanism or organization.

"The theory then to explain the formation of vegetable substances seems very simple. A seed is placed in a soil; it attracts substances from the earth; these substances constituting its food, enter the pores or vessels of the seed; in these pores, or in this state, their affinities are exercised; in consequence of which they are converted into sap; the different parts of the plant have a different mechanism, in consequence of which this sap assumes in one part properties different from those in another; in one part its affinities are exercised, whereby it is converted into fibrous vessels possessed of irritability or a contractile power; in another it is converted into mucilage; in another into sugar; in another into resin; in another into an acid; and so on of every juice found in plants. And thus a particle of matter may have its affinities exercised, and then itself be an agent, creating states in which the same affinities of other matter are exercised.

"It should not from this be supposed, that all the parts of a plant are composed of the *same* elements; although they are all formed from the sap, and on the same principles, viz. by the exercise of affinities regulated by a mechanism, or state created by some intervening body. This would be incorrect, as we find on analyzing some parts, their elements differ in proportions very considerably. If we can conceive of the different exercise of the affinities of particles of matter in different states, we can conceive that when the sap passes through certain vessels, most of one or two of its elements may go unchanged, while its other elements are altered: for example, we can conceive of the hydrogen and carbon of the sap uniting in one part to form oil; and the remaining constituents of the sap passing unchanged for other purposes; in another part, the oxygen is retained in a small quantity, so as to form a *sugar* with the hydrogen and carbon; in another part the oxygen is retained in such quantities as to form an acid; and so of all the rest of vegetable substances.

"No doubt light has considerable influence in creating states for the exercise of the affinities of the sap in the upper parts of the plant. In the ripening of fruit, its influence is remarked by every one. This ripening of fruit, by which acid and acrid juices are converted into such as are sweet and mild, tends very much to establish the explanation of vegetation, which I have ventured to offer. The conversion of sour fruit when baked into a sweet mass has the same tendency. In each of these cases, the changes must unquestionably arise from the different exercise of chemical laws in different states. Surely in an apple, a water-mellon, or a strawberry, there are no little vessels which can make sugar by a *peculiar action*."

Dr. Ewell appears before the public as a writer at an early period of life, and, therefore, does not claim for his first performance that maturity of execution which a longer acquaintance with the subject, and a more deliberate exercise of his powers would undoubtedly confer. He is impelled by an ardour of enthusiasm, natural at his age, which every liberal mind will cherish and commend. After doing so much, so well, in so short a time, and under the pressure of other pursuits, it would be unjust to require perfection. We warmly recommend his work to the perusal and patronage of the public. We consider him as one of those on whom the hopes and confidence of his country may safely rest. And from the talents, enterprise and research displayed in this publication, we look forward to his future exertions and rising powers as a source of usefulness, distinction and lasting fame.

A Short practical Treatise on the Efficacy of Kine-Pox Inoculation, as a Preventative of the Contagion of Small-Pox. To which is added, an Eulogic Oration on the Character of Dr. Jenner, *by Dr.* Lettsom. *By* Samuel Agnew, *A. M. Gettysburg, Pennsylvania.* 8vo. pp. 84. *Gettysburg, Pennsylvania.* Harper. 1806.

THE subject of vaccination has excited little controversy in America. Some respectable performances have appeared in favour of it; but scarcely any thing has been written on the opposite side. The general acquiescence in the reception of it on this side of the atlantic seems to be

owing to two causes; first, the experience of its efficacy on an extensive scale, and, as far as experiments have hitherto been made, in the prevention of small-pox; and, secondly, a prevailing disposition to leave whatever variance of opinion may still exist, to be decided in Great-Britain, the native country of the discovery, where the advocates and opponents of it have been long prosecuting the contest with the utmost zeal, and where there is every reason to expect the dispute will soon be satisfactorily and finally put at rest. Time, close observation, and a long course of multiplied and varied trials are necessary to settle some of the objections which have been alleged; and to this award, such objections in our judgment may be safely left.

Dr. Agnew arranges the subject of this pamphlet under three heads: 1st, the history of the discovery; 2dly, the character and peculiarities of the disease; and, 3dly, the testimony in favour of its preventive power against small-pox. Under these several heads he presents to the reader whatever is most important to be known, and is careful to select his materials from the most authentic and respectable sources. And he displays throughout the whole performance a zeal for the adoption of this most salutary and beneficial discovery, which does equal credit to his good sense and his benevolence.

Although generally averse to verbal criticism, we cannot avoid remarking with regret that Dr. Agnew should have suffered himself, in denominating the disease *kine-pock* instead of *cow-pock*, to fall into an uncouth and provincial dialect, which seems to have originated in whim, and to have been adopted in some parts of our country without reflection. The name of a disease, however generally received, is justly liable to alteration when it is found to be incorrect, and when another more precise and appropriate can be offered in its place. To the substitution of a more classical and unexceptionable title for that of cow-pock, we have no objection. But if *kine* be only the plural of *cow* (which we believe is generally admitted) and besides be nearly obsolete and very little understood, why introduce it to the exclusion of a more familiar and settled expression? We decidedly enter our protest against such useless innovation in language.

MEDICAL & PHILOSOPHICAL NEWS.

DOMESTIC.

Lewis and Clarke's Journey across the Continent of North-America, from the Potowmack to the Columbia River.

ONE of the enterprises which does honour to our times, is the expedition for exploring the country between the Bay of Chesapeake and the Pacific Ocean, in North-America. Our readers will recollect that we took notice of the discoveries made on this occasion in our Hex. ii. vol. iii. p. 315. And again we gave further particulars in our present volume, p. 165.

The intrepid commanders of this journey to explore the interior of North-America, have executed their orders in the most successful manner. They have visited the Western American Ocean near the mouth of the Columbia River, and returned home with the loss of but a single man by death. The party consisted of thirty-two persons. Capt. Lewis was at the head of the scientific department, and Capt. Clarke of the military.

They started from Washington in the summer of 1803, but they experienced great delay from the lowness of the Ohio during the drought of that year, and were not able to get further than Kahokia, on the Missisippi, that winter. In the spring of 1804 they entered the Missouri, and ascended it during that season as far as the Mandane Village, in about N. lat. 48, on the hither side of its great bend. After wintering there, they proceeded as soon as the weather would permit in 1805, and reached several of the sources of the Missouri where they arise in the stony mountains. They crossed these mountains, and descended the country on their western side, to the streams which fall into the Columbia. But these being too precipitous to be boatable, they travelled by land until they came to the level country, and then proceeded by water until they arrived within a few leagues of the ocean, where they encamped in the autumn of 1805, and tarried until the spring of 1806. As soon as they judged it safe to set out, they proceeded homeward,

and crossed the Stony Mountains in June, which were then covered with snow to the depth of several feet. To diversify their route, and extend their discoveries, their company repeatedly divided into two or three parties, and thus took a wide range of survey. After various excursions of this kind, they reunited all their forces on the Missouri, above the Mandane country, and came on in a body to St. Louis, the seat of government in Louisiana. Here they arrived in the fall of that year; and the two commanding officers returned to Washington in good health, Lewis in December, 1806, and Clarke in January, 1807.

Capt. Lewis has availed himself of all the opportunities which presented themselves, of gathering the productions of the regions through which he passed. He has accordingly brought home with him a fine collection, and in beautiful preservation, of seeds and dried plants. It may be expected that these will add many new species to the catalogue of plants already known. He has also brought home specimens of quadrupeds and birds, several of which will probably be new to naturalists, and not yet described in the books. We particularly allude to the various sorts of grouse, and of squirrels, which enrich the collection. Nor has he been inattentive to the mineral treasures of the lands he has visited. He has made as large a collection of these as he could; which, while they serve to enlarge our knowledge of the earths, metals and other fossils of those extensive tracts, will serve also to verify and confirm the narrative. It is curious how nature works: in Europe, lava, slag and pumice are the products of *burning mountains* or volcanos; but in some of the countries through which the Missouri passes there are vast *burning plains*, where all the volcanic productions are formed by intensity of fire, without the smallest appearance of a mountain. These smoaking districts of consuming coal had long before been known to the natives, and marked upon the dressed bison-hide, of which mention was made in our Hex. ii. vol. iii. p. 318.

Salt abounds in many places of these vast inland countries. Salt prairies, salt springs, beds of sal gem, and streams and rivers running for great distances too brackish for drinking, are known to all hunters and travellers. But the story of a mountain of salt appears to be a mistake.

There is no reason to believe the stories published about a nation of Welshmen up the Missouri. Some of the natives are much fairer than the generality of the Indians east of

the Missisippi. This is particularly the case with the Osages and the Mandanes. And those tales have been in all probability founded on the whitish complexions and portly figures of some of those western tribes.

On the Columbia river there is an almost unexampled population for Indians. The reason is, that fish is to be got in any quantity they please, and of course there is hardly any assignable limit to their increase.

Capt. L.'s map illustrates the geography of North-America in a novel and most interesting manner. The Missouri and its streams are gigantic waters, and pass through a vast and boundless expanse of the globe. The streams of the Columbia are curiously ramified, and collect their waters from wide and various sources, beyond the great dividing ridges. But the intervening mountains are not of very great height, for on their tops are trees of considerable size; nor do they form one entire and uninterrupted chain or barrier. They consist of many broken ridges, and parallel spines. From these eminences the waters of the Missouri and Columbia take their rise, and running through the interjacent vallies and gaps, unite in forming those famous rivers. Some of the head waters of these opposite rivers are not more than 60 or 70 miles apart. All the friends of geography have much to expect from this map. The publication of it is therefore earnestly to be wished.

But the researches of these travellers have yet a further extent. The regions they have visited are the great magazines of furs, scarcely heard of as yet even by the Canadian traders. Bison, bear, deer and beaver there enjoy their native haunts, sequestered from, and undisturbed by man. The peltry may be brought down the Missouri to St. Louis, and thence be transported to New-York, Quebec, or Orleans, in the old routes; or as soon as a factory shall be established at the Columbia, the skins and furs of the animals of the interior country may be added to the coverings of the seal and sea otter found on the coast, and be conveyed across the ocean in a short voyage to China. By this there will be a great saving of time as well as of distance.

As these gentlemen had numberless exposures, and many hair-breadth escapes, and as Capt. Lewis was on one occasion shot through the thigh, we cannot too much admire the success of their undertaking. For intrepidity and perseverance it ranks with those of Mackenzie, Park and Bruce; and promises to be of greater utility than them all. We

understand the work is progressing, and will be published as preparatory inquiries relating to natural history, geography and astronomy will permit.

Advantageous Communication between the Hudson and the Lakes.

The superior advantages of New-York for transporting produce across from the Atlantic Ocean and its waters to lakes Ontario and Erie and their waters, as well as to the country through which the rivers run from all their sources into the Ohio, and all the Missisippi above the Illinois, have been pointed out in a pamphlet lately printed in New-York. It is from the press of S. Gould, and is reported to have been written by Mr. T. Butler. It is entitled, " A Letter to the Inhabitants of the City and State of New-York, on the Subject of the Commerce with the Western Waters." The writer, who appears to have examined the subject with a great deal of care, has demonstrated the greater cheapness and facility of conveying the produce of the western country north of the Ohio river, and on both sides of the lakes, through New-York, than by any other route for transportation. The portage up the river St. Laurence, the road from Philadelphia to Pittsburgh, and the projected intercourse between the Potowmac and the Ohio, are all considered by this writer, and proved to offer fewer conveniences to the farmer and the merchant than the inland lock-navigation by the Mohawk river and the Oneida lake now affords; and which the new turnpike from Newburgh, on the west bank of the Hudson, in a northwesterly direction through Oxford and Salina, the great salt manufactory in Onondago, and thence to Oswego, will shortly present.

He computes that fifteen millions bushels of salt might be annually prepared at Salina; and might be delivered for exportation or consumption in the maritime counties, for sixty-two cents a bushel at Newburgh landing. The distance from Newburgh to Salina he makes but 165 miles, and thence to Oswego only twenty miles further; amounting to 185 miles in the whole; while from Oswego to Albany, by the ordinary water route, it is about 200. And Newburgh is situated 100 miles south of Albany, on almost a right line between it and the ocean.

There can be no doubt, that in the progress of events, the capital and enterprize of New-York, concurring with

the great advantages of its situation, fertility, population and resources, beyond the western boundary of Pennsylvania, will, in a short time, give its merchants the complete command of the western market, on the lakes and their tributary streams. And this will be effected by a fair competition with the Pennsylvanians, the Marylanders and the Virginians, transporting produce along their respective roads and canals.

Provision for a General Survey of the Coasts of the United States.

A few years ago a hydrographical survey was made, at the expense of government, of Long-Island sound. This we announced in our Hex. ii. vol. ii. p. 438. Since that time, Captains Fosdick and Cahoone, two of the persons employed, have published their chart. Encouraged by the success of this first attempt, a survey was ordered to be made, during the session of Congress in 1805-6, of that part of the coast of North-Carolina which lies between Cape-Hatteras and Cape-Fear. Of this we took notice in our Hex. ii. vol. iv. p. 90. Captains Jonathan Price and Thomas Coles performed that service during the last summer. They have made a valuable report of their observations, and accompanied it with a new chart of the coast. In this they consider that Cape-Hatteras shoals are commonly delineated on the maps too far to the west, thereby endangering navigation, by taking up vessels sailing with a supposed sufficiency of sea-room. They have found the bottom of the ocean in those parts to be a loose sand, moveable by the waves, and often with gravel, ooze and shells, and changing its position. There is no probability that a light-house can be constructed on the shoals, nor that buoys, or floating beacons, can be made to withstand the violence of the waves. They have sounded the coast of Capes Hatteras, Look-Out, and Fear, quite to the margin of the gulf-stream. Through the Frying-Pan shoals, off Cape-Fear, they have discovered an opening not hitherto known, ten miles from the land, which may be of great importance to the coasting navigation. For now vessels bound to and from Wilmington may pass through this opening in the shoals in four, five, and seven fathom water, instead of beating round the southern extremity of the flats. The shoals off Cape-Look-Out are the most dangerous to mariners.

Cape-Hatteras light-house is situated in 75° 30' W. and

in latitude 35° 14′ 30″ N. The shoals extend twelve miles in a south-east direction; and twelve miles farther, in the same direction, is the gulf-stream, with sixty fathom water at its edge. Thus it is twenty-four miles from the Cape to the stream.

Cape-Look-Out is in latitude 34° 34′ N. and long. 76° 37′ W. The shoals extend from the Cape fifteen miles in a south-south-east direction, and the broken ground as far as lat. 34° 20′ N. Thence to the gulf-stream the soundings are gradual to ninety-five fathoms.

At Cape-Fear light-house the longitude is 78° 12′ W. and lat. 33° 53′ N. The extreme southern part of the Frying-Pan shoals is in lat. 33° 35′. In this parallel the shoal runs twelve miles due east and west.

The information furnished by this second undertaking has been followed by an ample provision for a maritime survey of the whole coast of the United States. In the beginning of February, 1807, an Act of Congress was passed, appropriating fifty thousand dollars to enable the President of the United States to cause a survey to be taken of the coasts, and of all the islands, shoals, roads and places of anchorage, within twenty leagues of any part of the shores of the United States; as also the courses and distances between the principal capes and head-lands, and all such other matters as ought to be contained in an accurate chart. This survey is intended to embrace St. George's Bank, and all other banks, shoals, soundings, currents, and memorable things, quite to the gulf-stream.

Cuvier's Comparative Anatomy.

In our present volume, p. 157, while we were explaining Dumeril's new system of zoology, we mentioned professor Cuvier's work on comparative anatomy, as the source whence the principal materials were derived.

It is remarkable how slowly knowledge travels from one country to another. Cuvier's work, though the most excellent and elaborate in its kind, seems to be but little known among us. For independently of the foreign tongue in which it is written, there is so little intercourse between our booksellers and those of Paris, that there is not much chance of its being imported in the ordinary course of trade. And it may be supposed that few would import it by special order.

This is by far the most complete work on the anatomy of

man, considered in connection with that of other animals, that we have seen. It was published in Paris in the eighth year of the revolution (1801) under the title of l'institut Lecons d'Anatomie comparèe, de G. Cuvier, Membre de Institut National, Professor au College de France, &c. recueillies et publiès sous ses yeux par C. Dumeril, &c. that is, *Lectures on comparative Anatomy, by G. Cuvier, Member of the National Institution, Professor in the College of France, &c. collected and published under his inspection by C. Dumeril, &c.* The two volumes we have seen were printed at Paris by Baudouin, in octavo. The first of them treats of the "organs of motion" in man compared with those of other creatures, in an elaborate survey, the result of most extensive anatomical labour and research. To this book are added the tables of zoological classification, before referred to in p. 157. And the great merit of the plan is derived from its foundation in the structure and organization of the animal frame. The "organs of sensation" are described at large in the second volume, and those of the human species compared with the similar parts of other creatures. The whole forms a most instructive body of anatomical knowledge, very systematically arranged, and condensed within moderate limits.

There is one agreeable trait in this work, as well as in several others which we have seen from the Parisian presses; and that is the cordial and amicable co-operation of several distinguished men in the same pursuits. Too often does it happen among men of literature and science, that their works are defamed by satire, and their days embittered by envy. Nor is it to be doubted that Frenchmen have their rivalships, their discontents, and their jealousies, like other authors. But if we judge aright, there is more of the *esprit du corps* among the men of science in Paris than in any other place we recollect. They are more prone than any other people to undertake works of a national cast, and with a national spirit. And partnerships, in which the members of the firm combine their talents for the common good of the concern, are more frequent than elsewhere. This temper, which can not only tolerate, but praise a cotemporary, and instead of depreciating his merits, can aid in giving them their full value and currency, is of high importance to the diffusion of science, and to the happiness and fame of its promoters. Nothing, therefore, would be more gratifying to the true friends of science than to behold

its votaries dismissing their paltry and idle resentments, and combining their talents liberally to assist each other in the great work.

Horardy's Spanish Publication on the Yellow Fever.

In 1805, a person who calls himself one of the friends of humanity, in the neighbourhood of Cadiz, and who, as we understand, is named Joseph Horardy, published a book of about 300 pages, on the yellow fever. It is entitled, *Historia suscinta del Origin, sentomas, y metodas curativos de las enfermadades epidemicas, bajo el aplicado epitecto, de la fiebre Amarilla de los Estados Unidas de America, &c.* We took this in hand, expecting to find a good portion of information in it concerning the yellow fever of Spain, but were much disappointed in discovering it to contain little more than a collection of doctrines, extracts and opinions from the French, English, and American writers. Nothing more need be said of it than that the compiler, like most of his countrymen, is a contagionist; and has yet to learn the true and correct notions upon this subject.

Arejula's Work on the Yellow Fever of Andalusia, in Spain.

Some account may be expected from us of the celebrated DON JUAN MANUEL DE AREJULA'S book on the Spanish yellow fever. For the gratification of our readers we inform them, that it was printed at Madrid, in 1806, from the royal press, in one very large octavo volume, of almost 500 pages. It is entitled, *Breve Descripcion de la Fiebre Amarilla padecida en las Andalusias;* i. e. A short Description of the Yellow Fever which prevailed in the Andalusias. In the course of this survey, he treats of it as it raged in Cadiz in 1800, at Medina Sidonia in 1801, at Malaga in 1803, and at the same place, and various other parts of the kingdom, in 1804. He affirms (p. 153) that the distemper which raged at all these places was the same with the yellow fever of America. He is a strenuous contagionist; but with all his acuteness and research, is obliged to own the insufficiency of the story about its importation in a vessel of the United States, from Havanna, by the way of Charleston. And he confesses the difficulty there is (p. 255), and even the impossibility of determining positively whence the epidemic came. But he nevertheless carries it from Cadiz to all the places with which that city had intercourse. The distemper, strange to tell, is traced to Malaga from France.

Some troops, deserters and vagabonds, arrived there in a sickly condition in two brigantines bound from Marseilles to St. Domingo, and brought the yellow fever with them. Malaga, thus poisoned, diffused its venom round to the neighbouring villages and cities. Whether the epidemic appeared at Antequera, Rambla, Montilla, Espejo, Alicante, or at any other place within the Straits of Gibraltar, it was immediately traced to some person who had been at Malaga.

The author believes (p. 396) that the basis of the contagion, is an alkaline salt. He therefore recommends acid fumigations to decompound or neutralize it. But he rejects the nitrous vapour of the English, and the muriatic gas of the French, and declares that the *sulphureous acid gas*, or *vapour of burning brimstone* is by far preferable to them both (p. 406). We hope, for the credit of science, all these idlenesses will soon be laid aside.

From this account our American readers will be enabled to form an opinion of this celebrated Spanish publication. It is embellished with a large map of the city and harbour of Malaga.

Extracts from the Remarks made on the Trade of Veracruz, by the Consulado of that Place, for the Years 1802, 1803, *and* 1804. *Translated from the Spanish.*

1802. The mortal sickness of the black-vomit, which, from April to October inclusive, raged with extraordinary violence, deprived us of more than 1500 sailors and people from the country who had come hither for the purposes of commerce.

1803. The cruel sickness of the black-vomit, which hitherto has been the cause of so many evils, has been less fatal the last year than usual. The deaths in this city the last year, among the citizens and foreigners, including 535 who died in the several hospitals, were 959 persons. There were entered at the different hospitals 4,731 persons, of whom 3,671 were cured, and 525 remained on the 21st December. By the notes subjoined to the returns made from the several hospitals, it appears that the deaths caused by black-vomit were few compared with the former years. Of 428 entered at the hospital of St. Sebastian, only 69 died of that disease. If the extinction of this malady is effected, as is hoped by the measures taking by the police (cabildo) for the better regulation of the hospitals and cleanliness of the city, and the royal road is completed which

has been begun by order of the Consulado, and is already considerably advanced, agriculture, commerce and population will experience vast benefits.

1804. By the returns from the several hospitals, it appears that in the course of this year 6,075 patients were admitted, 5,156 of whom were cured, and 919 died, which, with 391 in the city, without including 39 quadroons and 66 mulattoes, makes the whole number of deaths to have been 1,310. In the returns from the royal hospital it is mentioned in a note, that of the number of sick received, being 3,432, there were 36 included, infested with black-vomit. Of these 30 were cured by friction with warm olive oil. And the report from the hospital of St. Sebastian, which is mantained by the corporation and consulado, states that 361 patients entered it with the black-vomit, 232 of whom were cured, and 129 died. Forty of these persons died a few hours after admittance, and only two remained at the end of the year. The remedies used are becoming more effectual, especially that of olive oil.

Facts concerning the Resuscitation of Animals after having been congealed to Stiffness.

In New-York there are several sorts of fishes which are recoverable to life after having been rendered frigid by frost. Trouts and pickerels are remarkable instances of this. But they must be taken out of water under peculiar circumstances, or they will never be capable of reanimation.

In the middle of winter, when the weather is intensely cold, and the brooks covered with a layer of ice a foot and more in thickness, it is common for the inhabitants in the upper parts of the state, to cut holes through the ice in convenient places, for the purpose of fishing. Uri Tracy, Esq. informed Dr. Mitchill he had often done this in the Chenango. Beneath the ice there is a quantity of water gushing fresh from the springs, and considerably warmer than the freezing point. In this water, trout and pickerel frequently pass the winter, and are in a condition to feed and bite at the bait. When taken on the hook and thrown out on the ice exposed to the freezing atmosphere, they become almost immediately as hard and inflexible as icicles. They may be kept in this state of suspended animation for hours, and sometimes even for days, and afterwards on immersion in cold water the ice will be gradually thawed, and

the fishes so recovered to life as to swim about the pail or tub, in which their frigidity and torpor have been removed.

A fact is related of trouts brought from Sacondago to Albany in a frozen state, and restored to brisk motion by being thrown into cold water to thaw. And many other cases equally clear and strong are related upon indubitable testimony.

That a fish should recover from freezing, the weather must be cold enough to congeal him before he dies by exposure to the air. If the cold is not severe enough to turn him to ice, almost instantly, he will gasp and die in convulsions, before the frost assails him; and in this case, it is certain that the introduction of heat, however gradual, will never be followed by a return of vital or any other animated motion. This was the reason why the experiments made on the congelation and resuscitation of fishes at Albany during the winter of 1789, by Dr. Mitchill and Simeon De Witt, Esq. failed. The weather was not cold enough to freeze them while they were yet living; but being exposed to the air long enough to die before congelation, there was no possibility of restoring them to life.

It is related that perch, streaked-bass and eels, are sometimes recoverable in the same way from a state of being frozen through and through. The facts are worthy of consideration by the physiologist, and give rise to much curious speculation on the tenure and properties of life.

A splendid Cavern discovered in the Lime-stone Country of Virginia, in 1806.

A curious cave has been lately discovered near Madison's cave, in Virginia, which has excited considerable observation and curiosity. Its discovery was the effect of a singular accident. It is reported, that a trap for raccoons was placed at the mouth of a small hole, which was observed at the surface of the earth. On examining the success of his stratagem soon after, the owner observed that it had entangled a pole-cat, which, in attempting to escape into the hole, drew the trap after it. The owner on widening the hole discovered that it led into a dark retreat. His curiosity being thus excited, he had lights immediately procured, which, upon entering the cave, discovered a new and most splendid scene to his astonished vision.

The height, length, width, direction and contents of this

singular cavity has been variously represented by different *observers*. Some have estimated its length and breadth at several hundred yards. Others have assigned it still more extraordinary dimensions. Some, whose imaginations are most vivid, have attempted to resemble this cavity under the earth to the splendid palaces on its surface; they have divided it into extensive splendid apartments, which they have fancifully adorned with curtains, festoons, sophas, and statues. But all agree that it is one of the most extraordinary caves which has ever been discovered in America, and when illuminated by the light of candles, one of the most magnificent specimens of nature's productions which they have ever beheld.

The roof, the sides, and many parts of the floor are strewed with the most beautiful petrifactions. These are almost of every species of form, colour and consistence. Some are as transparent as glass: some are streaked, and others are tinged with the deepest hues: some are conical, and others of the most irregular form: some are as hard an adamant, and others are extremely porous, friable and brittle. The basis of these crystals is principally *calcareous earth* or lime. There is not one of them which will strike fire with the flint; and of course there is no *silicious earth* in their composition.

The *formation* of these beautiful crystals is of very easy explanation. The little spars which are occasionally formed on and under one of the arches of the Richmond Canal, most strikingly point out the manner of their composition. If a stream of water has passed over a bed of lime-stone, and then filtered through the roof of this cave, what will follow? Either the water on the roof flows in such quantities, that its own weight forces it to descend to the floor, or it flows so slowly through the roof as to evaporate or be absorbed before it has acquired weight enough to descend. In the first case, the lime which *floats* in the *drops* of water will be successively carried to the floor, where it gradually accumulates into a solid pillar: in the latter case, those spars will successively accumulate *on the roof*. And thus different parts of the cave will sometimes exhibit spars upon its roof, and sometimes upon the floor.

Of all the specimens which we have seen of these beautiful productions, *one* has particularly attracted our notice. It was a conical piece of a reddish colour, which seemed to have been detached from its base by a saw. In its thickest

part it was perhaps about four inches in diameter. Upon inspecting its bottom, it presented the same consistency, hardness, veins, and streaks, which are perceptible in marble. This single fact seems to us to lay open the whole *theory of the formation of marbles.* From the shells and other fossil productions, which have been frequently found *engrained in* blocks of marbles, it was easy to infer that it was a *factitious* and formed substance; but here is a singular fact, which points out the *manner* of its formation. What is it but a calcareous *crystal*, formed in the manner which has been already mentioned, by water passing over lime-stone beds, and deriving the colours of its veins from the different colours of the earths and minerals through which it filtrates? Has it not been a long-established fact, that *lime* is the basis of all the marbles?

Several of the beautiful crystals of this cave are about to be converted into ornaments, as watch-seals, candlesticks and other domestic decorations.

The owner has already confined his treasure under a padlock, and admits no one to enter it without a douceur of 50 cents. He has sent a specimen of its various crystals to the Museum of Philadelphia.

American Mathematical Society.

Convinced of the utility of mathematical investigation—its great importance in every part of mechanical science—its subserviency to the convenience of mankind, and the abridgment of labour, a number of gentlemen of Philadelphia, and other parts of the United States, convened in the Philosophical Hall, in the city of Philadelphia, June 2, 1806, and *resolved* to institute a society for the promulgation of mathematical knowledge. They then proceeded to digest and adopt a constitution, for the better regulation of their subsequent proceedings.

Having adopted the constitution, the society proceeded to the election of officers, and the standing committee, when

Mr. *Robert Patterson* was chosen president,

Mr. *Samuel B. Wylie* was chosen secretary, and

Mr. *Joseph Clay* was chosen treasurer.

Messrs. Clay, Wylie, and Delamar, the standing committee of correspondence.

The society being thus organized, proceeded to business, and pitched upon the following subjects as prize questions; and

Resolved, 1. That a premium of fifty dollars be awarded

to the author of the best approved compendious system of practical surveying.

2. That a premium of thirty dollars be given to the author of the best approved piece upon the theory of arches to support weight or pressure—Both pieces to be put into the hands of the secretary on or before the fifteenth day of April, accompanied with letters respectively, signifying the candidate's name and place of residence.

The committee think it unnecessary to enlarge upon the importance of such an institution. Should the mathematicians in the different parts of the United States contribute their exertions to its support, not only the present, but future generations will reap the advantage. Animated with these views, the committee of correspondence address the several mathematicians in the United States, with a display of the general outline of the constitution of the society, and most cordially solicit their co-operation in promoting the object of the society, and invite them to attend next stated meeting.

Cinis, a Species of Alkaline Earth formed during the Incineration of Wood; which the Chemists have not as yet noticed in their Nomenclature.

During the combustion of many sorts of wood, there are several *fixed* substances formed, whose history is no less worthy of notice than that of the *volatile* ones. These are contained in the caput mortuum or residuary mass left on the hearth after incineration, and are called "*ashes.*"

Dr. Mitchill has found, like his predecessors, that this ashes is a very heterogeneous collection of materials. These may be aptly divided into two sorts; to wit, those which readily dissolve in water, and those which with difficulty incorporate with that fluid. The former is the SALINE, the latter the EARTHY part of ashes. And both of them, as they evidently do not pre-exist in the wood, are formed by new combinations of particles, during the act of burning.

Of the SALINE portion of wood-ashes the predominating ingredient is the vegetable fixed alkali or POT-ASH. When recently formed, and fresh from the fire, this fixed salt is in a CAUSTIC state. After exposure to the air in a cool place for some time, it attracts fixed air, and becomes a *carbonate of pot-ash.* Very commonly too this alkali is found to be combined with sulphuric acid into a *sulphate of pot-ash.* And lately Dr. Mitchill has observed that the phosphoric acid is united to it in the form of a *phosphate of pot-ash.* In these

two latter cases sometimes external causes, and sometimes the wood itself, seems to furnish a quantity of sulphur and phosphorus, which being acidifiable bases, first turn to acids during the process of combustion, and then the newly-formed acids connect themselves with pot-ash to constitute compound salts. Frequently likewise muriate of soda is discovered in wood ashes; but this seems to be derived from the culinary salt employed in cooking. In places where putrefaction is going on, the septic acid joins it, and forms the septite of pot-ash or salt-petre.

After these saline substances are extracted by water, by lixiviation or letching, a large quantity of *earthy* matter remains behind. The proportion of this varies in the ashes of different vegetables, but in that of oak and hickory perhaps amounts to eight tenths of the whole. In this state it is called *letched*, *dead*, or *soap-boiler's* ashes, and is bought at a high price by farmers in the neighbourhood of the city of New-York for manure. In its crude condition, as taken from the vats or letch-tubs, it abounds with charcoal, soot, and other half-consumed vegetable substances, which had escaped the destructive force of the fire. Particles of siliceous and argillaceous earths are generally present, derived in all probability from the sweepings of floors, the crumbling of chimneys and other external sources. Besides these, there is found a quantity of iron, and, as some say, of manganese. But above all, this residuary mass abounds in lime, which is intentionally added in its caustic state to attract carbonic and phosphoric acids from the pot-ash, and thereby to render that alkali quick and active; or in maritime situations a heavy charge of calcareous earth is derived from the roasting of clams, oysters, and other testaceous animals, and the addition of their shells to the ashes. But by far the greatest proportion of letched ashes consists of a peculiar kind of earth, which remains after all the before mentioned materials are separated. This earth is of a whitish colour and alkaline quality, and differs materially from lime, barytes, magnesia, strontian, or any other known kind of earth. And yet, copious and important as it is, science has never dignified it with a name.

To judge of the excellence of soap-boiler's ashes for manure, the following facts may suffice: after all the salts are extracted it sells for ten cents the bushel, or for one dollar and thirty-seven cents the cart-load of fourteen bushels, deliverable at the city wharf. When this is delivered to the

farmer at his own landing, the additional cost of freight to the country will come to twenty-five cents a load, amounting in the whole to one hundred and sixty two cents. To this must be added the expense of drawing and spreading it on the land. All this the farmers pay; and such is the competition for these refuse ashes, that it its not uncommon for the farmer who buys, to advance the cash to the soap-boiler six or twelve months beforehand. When scattered over sterile ground, and ploughed in, at the rate of twelve loads the acre, it enables it to yield great crops of wheat, clover and other kinds of grass and grain. And its effects are so durable, that the fertilizing operation of it may be often discerned for seven, ten, or sometimes even twenty years. It is this disposition of dead ashes to last, which makes it cost so much more dear than *street-manure*, a material which, though very valuable, is by far more transient.

Now, on considering the value and efficacy of letched ashes, it would appear that though some of its virtue was derived from the charcoal, soot and other undecomposed vegetable matter, lime, and the remnant of carbonate of pot-ash which remain mingled in it, yet that its principal worth was derived from the *peculiar earth* which constitutes the chief part of its bulk. It is time to give it a name and to introduce it into the Nomenclature. Dr. Mitchill proposes to call it CINIS, or the earth of wood-ashes; and under that title it has as good a right to stand conspicuous, and be known and talked of, as either magnesia or lime, pot-ash or soda; all of which are to be considered as compounds, but retained in the list of simples until their constituent parts can be ascertained by analysis.

It is worthy of remark, that this earth, which is so prized in America for a manure, was esteemed of old in Asia as a cement. Among the ancient Syrians it was one of the ingredients in forming plaster for their walls, and as it holds an intermediate place between lime and pot-ash, it can be easily conceived how it should act both as a cement and a manure. It is to be hoped that chemists will turn their attention more particularly than has been heretofore done to this important and neglected subject.

Translation into English, of Lancisi's Book on the noxious Exhalations of Swamps.

About a century ago, many cities and territories of Italy were so visited by pestilential distempers, that great depopu-

lation was the consequence. They prevailed with destructive violence around Rome, and in several other parts of the Ecclesiastical State. Their ravages were so frequent and so serious, that the celebrated Lancisi, the chief physician to the reigning Pontiff Pope Clement the eleventh, made an elaborate inquiry into their cause. This he has shown to be an exhalation from swampy and marshy grounds. His work *De Noxiis Paludum Effluviis* abounds with valuable facts and illustrations. And these are of singular value to the people of the United States of America, many of whom live under the same parallels of latitude with the afflicted parts of Italy. The popular distempers in and around Rome and other Italian cities, are worthy of being compared with those which occur at and about New-York and the other North-American towns.

Lancisi's work, though often quoted, had never been rendered into our language; at least we had never heard of an English version. At length, however, that difficulty has been removed. During the winter of 1806-7, Dr. Mitchill found time, amidst his Senatorial engagements at Washington, to make a translation of this important work, and to finish it before Congress ended its sessions. It is intended, in due time, to submit it to the public eye.

Antimony discovered in New-York.

Mr. Warden has forwarded from Paris to Dr. Mitchill, a specimen of crude antimony, which was taken from a vein of that metal at Sagherties, between Esopus and Kaatskill, in the State of New-York. It is reported to exist there in considerable quantity. The sample examined by the French chemists was pronounced to be very good.

An Account of a Rouge or Red Paint for the use of the Toilet; an explanation of its green colour; and a process to obtain it in as beautiful a state as that of China, by means of the flowers of the Carthamus Tinctorius: Communicated by the Baron Carendeffez, of New-York.

This plant is popularly mistaken for the true saffron, which is a bulbous plant of the Liliaceous tribe, and is multiplied by off-sets; whereas the Carthamus, or bastard saffron, can only be produced from seed, and belongs to a family of plants which have a compound flower, consisting of many florets, &c.

Although this plant in appearance is less valuable than the

true saffron, it nevertheless presents advantages which in several respects are not less interesting. It is from it that we obtain those beautiful shades of cherry-red, of bright scarlet, and the delicate rose-colour, which may be fixed at pleasure on silk or cotton, or on the variegated feathers which wave so gracefully on the heads of the ladies, and form a part of their ornamental dress. It is also by means of this plant that we obtain that beautiful greenish red paint, which forms so conspicuous an instrument in the arsenal of the graces, and which the skill of the toilet so elegantly employs for the purpose of hiding the blemishes and defects of nature.

About five or six years ago, being engaged in some experiments on the flowers of the Carthamus, I succeeded in striking a beautiful rose-colour on cotton. Since that time I had entirely neglected to prosecute my inquiries on this subject, when lately the Hon. Dr. Mitchill showed me a card, charged with a green colouring matter, which becomes a beautiful rose-red when slightly moistened with the finger. The relation and resemblance which I thought I could discover between the rose-colour which I had formerly obtained, and this shown me by the Doctor, made me suspect that they might be produced from the same source and depend upon the same principle; notwithstanding the difference produced by the green colour of that impressed on the card, from the other which I had fixed upon cotton, and which steadily held its rose-colour, without being impaired by exposure to light.

In order to satisfy my doubts and to substantiate my conjectures, I thought proper to make the following experiments, which any person may repeat, if he is desirous to obtain this red paint for the toilet, and to convince himself that the green hue afterwards received, is merely accidental and independent of the rose-colour, which does not take that shade when fixed upon cotton. The explanation of these circumstances is simple and easy.

Take any quantity of the flowers of this plant—enclose them in a bag of linen, of an open texture—wash them in water till the bag takes a rose-colour—dry what remains in the bag—weigh it—and mix with it about 12 or 15 per cent. by weight, of the carbonate of soda or of pot-ash in a pure state—dissolve the salt in rain or distilled water—mix the flowers thoroughly with this alkaline solution—and then squeeze them forcibly till nothing remains but a useless mat-

ter, entirely deprived of the colouring principle. Then take some lemon-juice purified by filtration—pour it on the liquid obtained by means of the alkali, observing carefully to add an excess of it, so as to supersaturate the salt, for the purpose of gaining an higher degree of that beautiful shade of the rose which is desired, which will quickly change to green when it is dry and exposed to the air, and more quickly still if exposed to light.

I conceive that this process admits of the following explanation. It is known that the immediate effect of light is to produce a green colour in the leaves of vegetables; that the green substance is a species of resin combined with hydrogen in an over-proportion, which forms a particular composition, whereby we may explain the reason of this precipitated rose-colour becoming green, and the reason of this colour being liable to be attacked by alkalies and precipitated from them by acids, and, finally, the reason of the insolubility of this species of resin in alcohol.

Black's Chemistry.

Among the enterprises of American booksellers in the introduction of valuable British publications into this country, we are much gratified to be able to announce *Mr. Mathew Carey*'s edition of *Dr. Black's Lectures on the Elements of Chemistry, delivered in the University of Edinburgh*, published from his manuscripts by Professor Robison. The merit of Dr. Black's labours in chemical philosophy, and the fundamental importance of his discoveries towards rearing the present superstructure of that science, must be familiar to all who feel any attachment to the subject. We have too good an opinion of our American readers to believe they will neglect a performance which has so strong a claim on their attention. The neatness and accuracy of this edition, and the improvement arising from the correction of many Scotticisms which are found in the British copy, do much credit to the American publisher.

Translation into French of Dr. Miller's Report on Yellow Fever.

This translation, published in Paris last year, and which has been lately received in this city, bears the following title; "*Histoire de la Maladie Maligne, appelée Fievre Jaune, avec ses effets pendant l'automne de* 1805 *à New-York, qui prouvent qu' elle n' est nullement contagieuse. Ecrite en forme de*

letre, par le Dr. EDWARD MILLER, *Medecin du Gouvernement, et addressée par lui au Gouverneur du dit Etat. Traduit de l'Anglais par* J. D. DUPONT.—*On a joint á cet interessant Ouvrage le rapport qui en a été fait a la Société de Medecine par MM.* PINEL *et* MOREAU *(De la Sarthe.)*

Granger's Account of the Progress of the General Post-Office.

General Post-Office, January 16, 1807.

SIR,

I do myself the honour to enclose "A View of the Progress of the Post-Office Department" for the fourteen years last past. It may afford you amusement at some leisure moment. I am, Sir,

With the highest esteem and respect,
Your most obedient humble servant,
G. GRANGER.

Hon. Mr. MITCHILL,
of the Senate.

The several periods referred to.	Number of Post-Offices.	Length of the Post roads.	Weekly transportation of the mail in carriages furnished for the accommodation of travellers	Weekly transportation of the mail in sulkies and on horseback.	Amount of weekly transportation of the mails.	Amount of yearly transportation of the mails.
		Miles.	Miles.	Miles.	Miles.	Miles.
March 3d, 1793.	195	5,642	8,567	7,662	16,229	845,468
March 3d, 1797.	539	14,226	14,902	19,708	34,610	1,799,720
March 3d, 1801	957	21,840	24,490	34,380	58,870	3,057,964
Jan. 24th, 1803.	1,283	24,458	30,172	37,228	67,400	3,504,800
January, 1807.	1,848	31,616	41,528	45,000	86,528	4,499,456

REMARKS.

Since the 24th January, 1803, the convenience, utility and security of mail coaches have been extended in different parts of the United States, over post roads, to the distance of 3,085 miles, where they never had been contemplated previous to that period.

Since the 3d of March, 1801, the post roads have increased 44¾ per cent. the establishment of mail coaches has been increased 69½ per cent. the daily transportation of the mail by stages has increased 2,427 miles, and the whole daily transportation of the mail has increased 3,950 miles.

The amount of yearly transportation of the mails, January, 1807, has increased to 4,499,456 miles, of which distance it is carried in stages 2,159,456 miles,
and on horse-back, or in sulkies 2,340,000

4,499,456 miles,

which proves that the daily progress of the mail exceeds 12,327 miles each day in the year.

Dr. Caldwell's new Publications.

Since the beginning of the present year, Dr. Caldwell, of Philadelphia, has published a translation from the French of "*A Treatise on Malignant Intermittents*," by J. L. ALIBERT, a distinguished physician of Paris. To the translation of this interesting work, Dr. C. has added an introductory discourse and occasional notes; and has subjoined, by way of appendix, "An Essay on the Pestilential or Yellow Fever, as it prevailed in Philadelphia, in the year 1805."

Dr. Caldwell has also published lately a pamphlet, entitled, "*An Anniversary Oration on the Subject of Quarantines, delivered to the Philadelphia Medical Society, on the 21st of January*, 1807."

These important publications will be more particularly noticed hereafter.

FOREIGN.

The Medical Committee of the Society for investigating the Nature and Cure of Cancer, consisting of Drs. Baillie, Sims, and Willan; Messrs. Sharpe, Home, Pearson, and Abernethy, and Dr. Denman, Secretary, circulated, in 1802, *a set of Queries for obtaining information regarding these. (See our Hex. i. vol vi. p.* 458.*) Since that time they have been republished, with Observations explanatory of their object. In reprinting a* Brochure *of so much intrinsic value, we hope both to preserve it, and to forward the views of so laudable an Institution.*

EVERY person must be sensible of the various difficulties attending the establishment of a new institution, and of the much greater and more numerous difficulties which beset our first steps in the acquisition of knowledge on a subject of which, it may be said, we are even at this time totally ignorant.* But, in order to form a basis of inquiry, in which the nature and cure of cancer, it is presumed, may be pursued with all the advantages of reason and experience, the Medical Committee very early drew out and distributed the following queries, for the consideration not only of the corresponding members, but of all medical men, to whom opportunities of answering them might, by study or by accident, occur. A satisfactory answer to any one of these queries would, in itself, be of great importance, and might probably lead to an explanation of others. It is therefore earnestly requested, if any new observation or discovery respecting cancer should be made, that it may be communicated to the secretary of this institution; and, if any progress in the investigation of the nature and cure of cancer be made by or imparted to them, it will, without delay, be laid before the public by the Medical Committee. It may be necessary to observe, that the promoters of this institution have never entertained the idea of creating the jealousy, or of interfering with the interests, of those who are engaged in institutions of a similar kind; their intention being solely that of co-operating in the laudable en-

* It is scarcely necessary, in this place, to refer the reader to an excellent Treatise on Cancer, by Mr. Pearson, surgeon of the Lock Hospital.

deavour to lessen the mass of human misery, by calling for the assistance of others, and by exerting themselves to obtain a remedy for a most painful and dreadful disease, against which all the medicines and methods of treatment hitherto proposed and tried have been unavailing.

The queries above mentioned are expressed in as plain terms as the nature of the subject would allow; but it has been thought that some benefit would accrue from a short comment or explanation of the aim and purport of each query in the following manner:

QUERY 1st.—*What are the diagnostic signs of cancer?*

It is very much to be wished that we had an exact definition of cancer, those of the nosologists being very imperfect and insufficient. It has accordingly happened that a disease, which has been denominated cancer by one medical man, has not been allowed to be such by another; and painful and hazardous operations have been performed by some, which were not thought necessary, or likely to be successful, by others. Hence an opening has also been made for false pretensions and impositions; and, though no person conversant in practice thinks that a true genuine cancer was ever cured, there is an abundance of cases in which cures of this disease are asserted with the greatest confidence. If a just and exact definition of cancer cannot yet be formed, we must be satisfied with such a description as a correct history of the disease will afford. This, it appears, has never yet been judiciously and accurately done; though it would probably enable us to discriminate the various forms of the disease, and its distinction from other diseases. Till, therefore, a precise definition, or a competent description be formed, it will be incumbent on us to mark all the symptoms peculiar and incident to cancer, and the order in which they arise, together with the varieties of this and similar diseases, and the effects of the medicines which may be tried under all the different circumstances, that we may be able to say something more satisfactory than that it seems to us to be cancer; or that it is cancer, because it is an indurated, painful, and unequally enlarged gland, terminating in ulceration; or that every ulcer, in certain parts, which resists the common modes of treatment, or methods of practice, is to be regarded as cancerous. It is much to be wished that we may no longer be

deceived by ambiguous words and phrases, or consider them as conveying to us any essential or practical knowledge.

QUERY 2d.—*Does any alteration in the structure of a part take place, preceding that more obvious change which is called cancer; and if there be an alteration, what is its nature?*

It might first be asked, Does any disposition to cancer in any part take place previously to any physical alteration or change of structure in the part? or are there any symptoms, local or constitutional, which denote that cancer is about to be formed? Then we may consider how the first alteration in the structure of a part disposed to become cancerous is to be distinguished from the structure of a part perfectly sound and healthy, or from the structure of parts disposed to other diseases. To such questions it might be answered, by the aspect; by the touch; by dissection; by corrosion of parts; by maceration; by boiling, or otherwise subjecting them to the operation of fire; by a chemical analysis of the component parts; by putrefaction; and by all the various methods used to detect the structure and other qualities of any part generally, or of its distinct component parts. Nor should this investigation cease with the beginning disease, but it ought to be conducted through the different stages; and this subject is now so open, both with regard to experiment and to the correction of what has been before said and done, that it is scarcely possible for any one to employ their thoughts upon it without improvement.

One great consequence of obtaining an answer to this query would be, that though we are unable to cure cancer in an advanced stage, we might extinguish the disposition to it, or suppress it completely in an early stage, whether the disposition or the progress consist in increased or new action of a part, or in a change of structure.

Some pains have been taken to discover, by the properties of the discharge from cancer, the nature of the disease. Through a long series of writers, from the time of Galen, *atrabilis* was considered as the cause of cancer; some thinking that it was of an acid, and others that it was of an alkaline quality; and those of each persuasion have attempted to cure the disease by opposite remedies and applications, with different effects, perhaps, but eventually with the same termination. It is not, however, yet ascertained that the

discharge from cancer is different from similar discharges, whether serous, sanious, or purulent, made from parts affected with totally different diseases.

QUERY 3d.—*Is cancer always an original and primary disease; or may other diseases degenerate into cancer?*

This is a question which has been very much disputed; at least there have been many different opinions concerning it. It does not imply that all the changes which take place from the commencement of the same disease, through its progress to the time when it is acknowledged to be indubitably a disease of a certain kind, should bear an exact or close resemblance: but it relates to the absolute change in the essence of one disease to that of another, with which it had originally no resemblance or affinity. We must, therefore, leave this query to be determined by future experience and observation; and if the latter clause of it should unexpectedly be decided in the affirmative, we must then inquire what kind of disease, and under what circumstances of the part, or of the constitution, there exists such aptitude to degenerate into cancer.

QUERY 4th.—*Are there any proofs of cancer being an hereditary disease?*

Whether cancer or any other disease be, strictly speaking, hereditary, has, like many other opinions, been positively asserted, and as positively denied. Whether children born of cancerous parents be more liable to cancer than others, from any structure or organization of the body, or any rooted principle of the constitution, may, by attentive observation, be discovered; and if it should be so proved, we might be led to the prevention of cancer by medicine, by well-regulated diet, or a circumspect manner of education, and of living. If it be proved, on the contrary, that cancer is not hereditary, the minds of many would be relieved from the distress of perpetual apprehension.

QUERY 5th.—*Are there any proofs of cancer being a contagious disease?*

This query certainly requires some explanation. Does it imply a possibility of cancer being conveyed from one

person to another by the breath, as in the hooping-cough, and, as some have suspected, in consumption? or by effluvia exhaled from a body afflicted with this disease, as in infectious fevers? or by the breath passing over an ulcerated surface, as in cancer of the mouth or lip? The opinion of cancer being contagious having been advanced, it is become necessary to discuss it, as far as we can, by observation, by experiments, and by casual occurrences. Now we are endeavouring to collect all the *incidentia cancro*, the most apparently trifling fact, if duly authenticated, should not be suffered to pass without notice, as it may direct us to the knowledge of things of great importance.

QUERY 6th.—*Is there any well-marked relation between cancer and other diseases? If there be, what are those diseases to which it bears the nearest resemblance in its origin, progress, and termination?*

Whether there be any relation or affinity between cancer and other diseases acknowledged not to be cancerous, as is the case with all unproved assertions, has been by some affirmed and by others denied. The second part of this query is equally unsupported and maintained. Some have been assured of the affinity between cancer and scrophula, and others of that between cancer and syphilis: but neither of these opinions has been proved or well supported by a just statement of facts, by regular induction, nor by any collateral circumstance accompanying methods of cure, or the use of any particular medicine. Many of the terms given to disease by the ancients seem not to have been precisely used; yet they made some distinctions of similar diseases, with which few people at the present time seem to be exactly acquainted. For instance, by Cancer, or Carcinoma, they meant a spreading ulceration of a schirrous tumour; by the term Lupus, an inveterate and corroding ulcer; and, by *Noli me tangere*, probably they meant to denote in general what the words imply; tumours, which, while they remained easy and at rest, should not be disturbed. They gave also names according to the part affected, but without any difference in the nature of the disease. But more particular inquiry should be made on this part of our subject; for Mr. Home has given a very interesting account of his having removed large portions of the tongue, in diseases of that part, which were allowed to be cancerous. Is it proved that cancer of the breast is exactly the same disease as can-

cer of the tongue, or that of the uterus? or that, in every case of cancer, in any part, the same method of treatment will be proper? The distinction of similar diseases is very necessary, because medicines, which may be of service in one of these, may be injurious in another. Let us hope that, when precise distinctions are made between cancer and resembling diseases, and between the various kinds of cancer, appropriate and efficacious methods of treatment of each disease will follow, to the great benefit and relief of the afflicted, and to the credit of the profession.

Mr. Hey, of Leeds, in a late publication, has given an account of a new or hitherto imperfectly described disease, which he calls *Fungus Hæmatodes*, which, as it is incurable, we have no better way of classing than as a species of cancer.

Now we are speaking of the terms used by the ancients, it will not be amiss to observe that, from the time of Galen to the present, there seems to have been little or no difference between the medicines given, and the applications used, for the cure or relief of cancer.

QUERY 7th.—*May cancer be regarded at any period, or under any circumstances, merely as a local disease? Or does the existence of cancer in one part afford a presumption that there is a tendency to a similar morbid alteration in other parts of the animal system?*

An answer to this query would be highly important, as it is the *experimentum crucis* of many operations which have been performed for the extirpation of cancerous parts. In cancer of one part, perhaps, all similar and sympathizing parts may be affected; perhaps the whole constitution. A surgeon, who is said to have great skill and success in removing cancerous breasts, has said, that in many truly cancerous affections of that part, he had found, on examination, that the uterus exhibited marks of the same disease, and that the state of the uterus was his guide in determining him to extirpate or to avoid operating upon diseased breasts. If the uterus was discovered to be affected, he refused to perform the operation, having constantly found it unsuccessful under such circumstances; yet it does not follow that all extirpation of the breast will be successful, if the *uterus* be free from disease. When operations fail to remove the whole disease, which is in some cases impracticable, the sufferings of the patients are aggravated, and their lives shortened, by operations; of course they ought not then to

be performed. Tumours in the breast, of a considerable size, will often remain in a quiescent state for many years, even to the close of life, if not disturbed by injudicious treatment or extraneous injuries, of which the ancients were well aware. It therefore appears as improper to extirpate these, as it does to suffer them to remain when they begin to be disturbed, and can be wholly removed. It appears that more caution than has been usually exercised seems necessary in these operations. It is also requisite to decide, by repeated trials, whether the extirpation of cancerous breasts by the knife or caustic be preferable, as far as relates to the operation, or a prospect of a return of the disease. In practice, we must distinguish between the extirpation of a diseased part and the cure of the disease; the latter of which is the object of these queries, as many parts which do not admit of extirpation are liable to cancer. Certainly many breasts, which were not cancerous, have been extirpated by a painful operation, often through the want of some criterion of cancer, and sometimes, it is feared, from motives of self-interest, or a cupidity to acquire undeserved reputation. It is worthy of observation *to determine* whether any cancerous sore in the breast, or any other part, had ever more than one opening, and whether external injuries ever give rise to cancer, or merely aggravate and put in action a disease which before existed. In the *Lock Hospital*, there is at this time a case of cancer of the *penis*, apparently occasioned by external injury alone. The same fact has been often asserted in cancer of the breast.

QUERY 8th.—*Has climate or local situation any influence in rendering the human constitution more or less liable to cancer, under any form, or in any part?*

There is a considerable variety in the diseases to which human beings are liable in hot and cold climates, and in damp or dry situations, or in those which are low or exposed. The *Goitre* has not been found, or very rarely, in warm and flat countries, nor the *Yaws* in cold ones. The *Lepra*, of every kind, is infinitely more frequent in some countries than in others, and more virulent. With regard to cancer, it is not only necessary to observe the effects of climate and local situation, but to extend our views to different employments, as those in various metals and manufactures; in mines and collieries; in the army and navy; in those who lead sedentary or active lives; in the married

or single; in the different sexes, and many other circumstances. Should it be proved that women are more subject to cancer than men, we may then inquire whether married women are more liable to have the *uterus* or breasts affected; those who have had children or not; those who have suckled, or those who did not; and the same observations may be made of the single. The cancer to which chimney-sweepers are subject is known, but not accurately understood; and none but fruitless observations have yet been made upon it, except such as relate to operations.

QUERY 9th.—*Is there any particular temperament of body more liable to be affected with cancer than others? If there be, what is the nature of that temperament?*

The word *temperament* has been often used by medical writers without any precise meaning. It is here meant to signify any native or acquired habit of body, which may dispose to or resist the influence of cancer. Should this query be answered in the affirmative, having discovered the temperament most liable to cancer, we might be led to the prevention of this disease, as was before observed under query the 4th.

QUERY 10th.—*Are brute creatures subject to any disease resembling cancer in the human body?*

It is not at present known whether brute creatures are subject to cancer, though some of their diseases have a very suspicious appearance. When this question is decided, we may inquire what class of animals is chiefly subject to cancer; the wild or the domesticated; the carnivorous or the graminivorous; those which do, or those which do not chew the cud. This investigation may lead to much philosophical amusement and useful information; particularly it may teach us how far the prevalence or frequency of cancer may depend upon the manners and habits of life. As establishments are now formed for the reception of several kinds of animals, and as the treatment of their diseases has at length fallen under the care of scientific men, it is hoped that the information here required may be readily obtained. If animals which live only on herbs, and never drink any other liquid than water, prove to be the least or not at all subject to cancer, such proof may, in many cases, become a guide in practice.

Trees and other vegetables are subject to diseases which

in time destroy them, if not remedied by art. They are also subject to injuries from external causes. In both these cases, the constitutional powers of the plant are exerted as evidently for its preservation, and for repairing its injuries, as in animal bodies, and in a manner not unlike what has been observed in animals, under the same circumstance.

QUERY 11th.—*Is there any period of life absolutely exempt from the attack of this disease?*

With regard to the periods of life when human beings are most or at all liable to cancer, it seems to be generally admitted to be most frequent in old or advanced in age; but this is not satisfactorily proved. Nor is it certainly known what is the earliest period of life at which cancer has been observed to take place; though no case of that disease has yet been noticed before twenty years of age; at least not before the time of puberty, when the parts, most frequently affected with cancer, undergo a great and conspicuous change; so that some connection may possibly be observed between puberty and this disease. The same may also perhaps be observed at the time of the final cessation of the menses. Among large bodies of children collected together in charity and other schools, or of adults in hospitals, in convents, and monasteries, opportunities of answering this query must certainly occur. There is, however, at this time, a young woman in the institution with cancer of the tongue. She is in the eighteenth year of her age, full grown, but has never menstruated. She never had any glandular or scrophulous complaint, but was a very healthy girl, till about ten months ago, when a slight ulceration appeared on the left side and near the middle of her tongue, which is in great part, at this time, destroyed. Her teeth are of a jet black colour. Though she must of necessity swallow considerable quantities of purulent matter from the ulcerated cancer, her health is, in all other respects, perfectly good.

QUERY 12th.—*Are the lymphatic glands ever affected primarily in this disease?*

This query goes to the very root of inquiry with respect to cancer, which has been hitherto said always to originate in the glandular system, without distinguishing, however, the particular set of glands. In cancerous affections of the eye, it is believed that the ball of the eye is not primarily affected, but the lachrymal gland. In cancers of the breast, the lymphatic glands appear to be affected only in a secon-

dary way, when the disease is making progress. It is probable that careful attention to the objects of this query would lead to many new observations respecting the first seat, cause, and effect of cancer.

QUERY 13th.—*Is cancer, under any circumstances, susceptible of a natural cure?*

Many diseases and accidents, to which the human body is liable, are cured or repaired by some process of the constitution peculiarly and admirably adapted to the kind of disease or accident. The principle of this process, or the process itself, has usually been expressed by the term Nature, and, in medical language, more frequently *Vis Medicatrix*. But no instance has ever occurred, or been recorded, of cancer being cured by any natural process of the constitution. It is not, however, unlikely that the enlargement of a part containing the *corculum*, or first principle of cancer, may be in consequence of a process set up by the constitution for confining the effects of the disease to the part where it originally existed; thus preventing its ravages or influence upon the constitution. When, therefore, an indurated and enlarged part of a truly cancerous disposition begins to inflame and to be disturbed, the morbid principle may be considered as having overpowered the shield or barrier formed around it for the defence of the constitution. On this principle, trees, when injured by external or other causes, seem to exude and form an external or adventitious support to supply the deficiency of the part weakened or destroyed. But this is a speculation with which we are not concerned, and by which we are in no degree whatever to be guided in the present inquiry. Facts alone, and those indubitably proved, are in this place to be admitted, till such a number shall be collected as will enable us to establish, by fair induction, a sound practice, no longer the creature of presumption or vain opinions.

In the few instances of cancerous parts becoming gangrened, in the breast for example, though the whole *mamma*, or a great part of it, has sloughed away, the ulcer has remained cancerous, and none of the patients have been saved. It is a curious fact, and worthy of particular notice, that no person with an old ulcer in the leg has ever been known to have cancer, though the ulcer was not suspected to be cancerous. From this observation it is probable that issues have been so often directed, with the view of preventing or retarding the progress of cancer.

Experiments to ascertain the component Parts of Atmospheric Air.

The names of Humboldt and Gay-Lussac are too advantageously known to the public, as able naturalists and indefatigable chemists, to require that I should offer any apology for transmitting, with a view to insertion in the Monthly Magazine, the following short account of some new experiments lately made by them, in order to ascertain, with greater precision than hath hitherto been done, the proportion of the component principles of atmospheric air.

The alkaline sulphurets have been long employed as eudiometers, from a belief that they absorb oxygen alone, without having the least affinity for azote; but this opinion is now found to be erroneous, as these sulphurets, when heated, absorb a portion of azote, as will be seen from the following experiments.

The illustrious chemists above mentioned took two flasks of unequal capacities, into which they put equal quantities of heated sulphuret. At the termination of ten days, the absorption in the small flask was 22, 5, and in the large one 30, 6. They next exposed pure azote to the action of an alkaline sulphuret, heated to ebullition, in which case a considerable portion of the azote was absorbed; but when a solution of the same sulphuret was used cold, as is always done by M. Berthollett, no absorption of azote took place, at least not in a sensible degree.

Humboldt and his associate, nevertheless, give the preference to the eudiometer of Volta, which it is well known consists in detonating hydrogen with atmospheric air, by means of the electric spark. The result of their numerous experiments, indeed, fully prove that this is the best method of ascertaining the exact quantity of oxygen contained in atmospheric air: they observed, however, in the course of their experiments, some phenomena it was difficult to explain.

On mixing 100 parts of hydrogen, with 200 of oxygen, and inflaming them by means of the electric spark, the absorption was 146.

The same absorption took place on mixing the 100 parts of hydrogen with 300, 400, or even 900 parts of oxygen.

On the mixture of 100 parts of hydrogen with an equal quantity of oxygen, the absorption was 55.

One hundred parts of hydrogen mixed with 1600 of oxygen, did not detonate.

The other gasses exhibited the same differences.

More numerous experiments, however, convinced these

chemists, that 100 parts of oxygen require for its complete saturation 200 parts of hydrogen; whence they conclude, that in the preceding experiments the hydrogen had not been wholly inflamed; and that this circumstance had occasioned the results which appeared to them so surprising.

They now proceeded to ascertain, whether the product of the combustion of hydrogen and oxygen was uniformly pure water, or if it contained acid. The result of these experiments was, that water so obtained is perfectly pure.

They next instituted a vast number of experiments, in order to determine the respective quantities of oxygen and hydrogen contained in this water, and ascertained that 100 parts, in bulk, of oxygen gas require nearly 200 parts of hydrogen to saturate it completely. According to the experiments of Fourcroy and Seguin, 100 parts of the former require 205 of the latter.

Their object was now to ascertain, what were the proportions of these two gasses in the water. From the experiments of Fourcroy, Vauquelin, and Seguin, the most accurate hitherto made on the subject in question, water contains in weight 85,662 parts of oxygen, and 14,338 of hydrogen. But these experiments having been made at the temperature of 14°, and no allowance made for the water held in solution by the gas, it follows, if we admit with Saussure, that a cubic foot of air, at the temperature of 14°, contains nearly 10 grains of water in solution, that the relative weight of the oxygen to the hydrogen, in place of being 85,662 to 14,338, should have been 87,41 to 12,59.

Having ascertained the accuracy of Volta's eudiometer, they proceeded by its means to fix the precise quantity of oxygen contained in atmospheric air; and the result of these experiments is, that it contains 0,21 parts of oxygen.

Not having been able to discover any sensible quantity of hydrogen in this atmospheric air, they are of opinion, if any was present, it could not exceed 0,003; for it is plain that the hydrogen, which is constantly disengaged from different bodies, must be discoverable, unless when it does not amount to one-thousandth part.

Carbonic acid must likewise be present in atmospheric air, though Humboldt was not able to discover it; a circumstance which evidently proves that it exists therein only in a very minute proportion.

Our chemists next ascertained that the purity of atmospheric air varies very little in different situations. They filled a vessel with air in the pit in the *Théâtre-Françoise*,

when it was extremely crowded, and another at the upper part of the house. The air contained in these vessels scarcely rendered lime-water turbid.

Common atmospheric air contains of oxygen -	0,210
That taken at the upper part of the *Théâtre-François*	0,202
That taken in the pit - - - - - -	0,204

Seguin also analyzed the air in the wards of hospitals, which were kept carefully shut, during twelve hours previous to the experiments. The air had acquired an insupportable fetid odour, notwithstanding which, he found it, on examination, nearly as pure as common atmospheric air. Fontana had before that period obtained the same results in the *Hôtel Dieu*, at Paris. From these facts, it should seem, that the inconveniences experienced in crowded apartments, cannot be attributed to a deficiency of oxygen, but must proceed from particular pestilential emanations.

Water, it has long been known, contains air, as air, in like manner, contains water. After the most accurate examination of the air disengaged from water, Humboldt and Gay-Lussac ascertained, in the most satisfactory manner, that it contains more oxygen in a given quantity than atmospheric air; but this portion varies according to the period at which it is collected.

Thus air extricated from water when it begins to be

heated, contains of oxygen - - - -	0, 23. 7
When farther heated - - - - - -	0, 27. 4
When still farther heated, - - - - -	0, 30. 2
When at the boiling point - - - - -	0, 32. 5

Senebier, Ingenhouz, Berger, and Delametherie, had previously proved, by numerous experiments, that water absorbed the different gasses which changed their quality. These experiments, on being repeated by Humboldt and Gay-Lussac, furnished the following results.

One hundred and nine parts of oxygen gas exposed to the action of the water of the Seine, were reduced 40 parts; the remainder, examined by the eudiometer, was found to contain 37 parts of azote. Thus it had lost 77 of oxygen; and 37 parts of azote, according to them, were disengaged from the water.

One hundred parts of hydrogen, exposed in like manner, lost 5 parts. The want of uniformity in the results which they obtained, prevented them from deciding on the changes which the gas underwent during its exposure.

One hundred parts of azote, exposed to the action of

water, were diminished three hundredths. The residue contained 11 parts of oxygen displaced, in the opinion of Humboldt and Gay-Lussac, by 14 parts of azote.

Two hundred parts of hydrogen mixed with 400 parts of oxygen, and exposed to the contact of Seine water, during ten days, were diminished 38 parts; but the residue contained 142 of hydrogen, 174 of oxygen, and 246 of azote.

These experiments are all in perfect conformity with those previously made by Delametherie, Ingenhouz, &c. but the conclusions drawn from them by Humboldt and Gay-Lussac are extremely different.

Delametherie inferred, that the oxygen exposed to the contact of water was decomposed, and a portion of it converted into azote.

That the hydrogen, exposed in like manner, was also changed, and a part of it converted into azote.

That the azote exposed to water became ameliorated, and a certain quantity of it was changed into oxygen.

Humboldt and Gay-Lussac, on the contrary, conclude that the oxygen exposed to the action of water is absorbed by it, and displaces the azote, which ascends into the bell-glass.

That the hydrogen, exposed in like manner, is also absorbed by the water, and displaces the other gases which ascend into the bell.

That the azote exposed to the contact of water is absorbed by it, and displaces the oxygen which ascends into the bell.

It remains for impartial chemists to decide which of these opinions is most conformable to truth. But this question involves another, viz. whether all these gases are elementary indecomposable substances, as well as all other elementary substances of modern chemistry?

The observations of Humboldt and Gay-Lussac, terminate with a table exhibiting the analysis of atmospheric air, during 36 days, from the 16th Nov. to the 22d Dec. The temperature had, during this period, varied from 12° of the centigrade thermometer, to 4. 1.

Wind, rain, and snow, had all successively occurred in the course of these experiments. The quantity of oxygen present was always 0. 21. It was, however, at one, 0. 21. 2, and at another 0. 20. 9.

From these facts it may be concluded, that atmospheric air contains,

Oxygen - - - - -	0. 210
Azote - - - - -	0. 783
Hydrogen - - - -	0. 003
Carbonic acid - - - -	0. 040

APPENDIX.

Correct List of all the Patents that have been taken out of the Office of Secretary of State.

[Continued from p. 224.]

1803.

IMPROVEMENT in the caboose of a vessel for distilling fresh from salt water, Simeon Rouse, Jan. 1. A saw mill for cleaning cotton, Gurdon F. Saltonstall, Jan. 4. Machine for hulling rice, Christopher Hoxie, Jan. 7. Refrigerator for domestic uses, Thomas Moore, Jan. 27. Boiler for accelerating the evaporation of liquids, John Moffat, Feb. 1. Improvement in stills, John Moffat, Feb. 1. Machine for raising water, Benjamin Cooley. Feb. 1. Manufacturing marle into lime, Jedediah Peasley, Feb. 1. Making brandy out of all kinds of grain or fruit, Christopher J. Hütter, Feb. 11. Machine for pairing apples, Moses Coates, Feb. 14. Improvement in a guage auger, Abel Stowel, Feb. 14. A machine for making hot wrought nails, &c. Elisha Bartlett, Oliver Bartlett, Otis Bartlett, and George Bartlett, Feb. 17. Improvement to their patented roller cotton gin, William Bell, and John S. D. Montmollin, March 7. Improvement in extracting a spirit from starch water, John Naylor, March 7. A wheel to turn under water, Silas Bent, March 7. A horizontal wind mill, John Baptiste Aveilhé, March 16. A wreck raft, Abm. Du Buc Marentille, March 18. A sea-sitting chair, Abm. Du Buc Marentille, March 18. A power obtained by the rising and falling of the tide to give motion to all kinds of machinery, John Staples, jun. March 18. Submarine passage, or hollow inverted arch, John Staples, jun. March 18. A machine for cleaning clover seed, John Cottle, March 21. An improvement in time pieces, David F. Launy, March 21. Improvement in the process of manufacturing sea salt, George Hunter, March 24. Improvement in the mode of obtaining antiseptic gas, Peter De La Begarre, and J. B. M. Picornell, March 24. Improved house fan, Edward Marquam, March 28. Antibilious pills, Thomas H. Rawson, April 4. Improvement in his evaporating furnance, John Richardson, April 4. Improvement in a cooler or condensor of vapour, William How, April 6. Improvement in producing steam, John Stevens, April 11. Improvement in a ruling machine, Daniel

Brewer, April 22. Improvement in heating and boiling water, Benjamin Platt, April 27. Improvement in the mode of constructing vessels with crooked keels, Eliphalet Beebe, April 27. Machine for deepening channels, Mathew Barney, May 4. Improvement in building boats, William Hopkins, May 13. A rolling machine for cleaning cotton, Gurdon F. Saltonstall, May 14. Improvement in distilling spirits, Daniel Ilsley, May 14. Improvement in cutting grain and grass, Richard French, and John T. Hawkins, May 17. Improvement in the pentagraph and parallel ruler, John J. Hawkins, May 17. Improvement in the application of the principle of rectifying or improving spirits, Burgiss Allison, May 17. Machine for pumping, John Clarke, May 19. Improvement in working the bellows of a furnace or forge, John W. Godfrey, May 25. Expediting the manufacture of common salt, Timothy Alden, jun. May 25. Improvement in the method of distilling or making alcohol, Lemuel J. Kilborn, June 4. Improvement in extracting the effective matter contained in barks, &c. for dying, John Biddis, Thomas Bedwell, and William Mitchell, June 7. Machine for making hinges, David Morse, June 10. Improvement in the manufacturing of hats, Ezra Corning, jun. June 13. Improvement in the steam engine, Samuel Morey, Rufus Graves, and Giles Richards, June 15. Physiognotrace, Isaac Tood, Augustus Day, and William Bache, June 15. A rocking churn, Walter Keeler, and James Waring, June 23. A machine for breaking and carding sheep's wool, Benjamin Standring, June 28. Machine for shearing woollen and other cloths, Liberty Stanley, June 25. Machine for pulling hair from skins, Nicholas Young, June 28. Improvement in the construction of iron cabooses, William Ashbridge, June 28. Improvement called the Columbia fireplace, Robert Heterick, June 30. Improvement in the mode of applying springs to window sashes, Samuel S. Camp, July 1. Improvement in distillation, by the application of steam in wooden or other stills, Samuel Brown, Edward West, and Thomas West, July 8. Machine for packing goods, John Clark and Evan Evans, July 20. Method of cooling liquors, David Lownes, July 21. Method of securing leaden or other pipes from frost, &c. David Lownes, July 21. Machine for splitting and shaving shingles, Daniel French, July 25. Improving in a powder mill, George Keyser, July 27. Machine for separating clover seed from the " pod," Timothy Kirk, July 28. Im-

provement in the construction of stills, Lewis Geanty, Aug. 4. Machine for boring holes in rocks under water, John Baptiste Aveilhé, Aug. 24. Improvement in a water cock, George Youle, Aug. 25. Preparing seals' fur for hats, George Cleveland, Sept. 9. A wheel press, Hezekiah Betts, Sept. 13. Mode of constructing carriages, John C. Stroebel, Sept. 19. Family pills, Daniel Coit, Oct. 5. Machine for making wrought nails and brads out of hot rods, Lazarus Ruggles, Oct. 18. Threshing machine, Jedediah T. Turner, Oct. 19. Improvement in the construction of the keels of vessels, Gilbert Livingston, Oct. 22. Machine for shelling corn, Paul Pilsbury, Oct. 25. Improvement in boilers, also working stills with the same, William Thornton, Oct. 28. A horizontal draft wind-mill, Samuel Goodwin, Oct. 31. Finding salt water and metals. *Bletonism!* Valentine Cook, Nov. 1. Vegetable elixir, or cough drops, Samuel Cooley, Nov. 12. A dry bellows pump, Enoch Alden, Nov. 15. Improvement in spinning wheels, Amos Minor, Nov. 16. Improvement in wind-mills, Asahel E. Paine, Nov. 19. Improvement in fastening and supporting window sashes, Jacob Osborn, Nov. 24. Improvement in the cotton gin, William Bell, Nov. 24. Improvement in propelling boats for inland navigation, William Bell, Nov. 25. Improvement in the wind-mill, William Bell, Nov. 25. A cylindric ruler for ruling paper, John Fairbanks, Nov. 30. Improvement in grinding painters' colours, printers' ink, &c. Jacob Cist, Dec. 3. Machine for separating the seed from cotton, Joseph Eve, Dec. 6. A twilling machine for pricking leather for cards, Pliny Earl, Dec. 6. Improvement in a fire-engine, Stephen Steward, Dec. 6. Machine for rolling plates of iron and cutting them into nails, Samuel Rogers, and Melvill Otis, Dec. 7. Improvement in window springs, James Curtis, jun. Dec. 10. Improvement in still heads and condensors, Edward Richardson, Dec. 16. Improvement in making cold cut nails and brads out of rolled iron, Joseph Elgar, Dec. 16. Improvement in separating clover seed, wheat, &c. from the husk, David Buckman, Dec. 21. A hydro-mechanical press, John Beverly, Dec. 26. Improvement in painting rooms, John Selby, Dec. 30. Improvement in making colours for painting, printing, &c. Francis Guy, Dec. 30.

1804.

Machine for making brick and tile, by cutting the mortar, Nathaniel Miller and Philip W. Miller, Jan. 5. Improvement in stills or boilers, Leonard Beatty, Jan. 19. Im-

provement in preparing quercitron or black oak bark for exportation or home consumption, for dying or other uses, Thomas Benger, Jan. 25. " A double draught fire-place," Talmage Ross, Jan. 23. Improvement in the construction of stills, and the process of distilling spirits, William Wigton, Jan. 30. Improvement called the screw-mill for breaking and grinding different hard substances, Oliver Evans, Feb. 14. " Improvement in steam engines, by the application of a new principle by means of strong boilers to retain and confine the steam, thereby increasing the heat in the water, which increases the elastic power of the steam to a great degree, Oliver Evans, Feb. 14. Improvement in wheels to be moved either by wind or water; for the purpose of giving motion to all kinds of machinery, mills, engines, carriages, ships, boats, &c. &c. John Staples, jun. Feb. 17. " In setting stills and other large kettles," Israel Wood, Feb. 21. Machine for threshing and cleaning grain, Thomas Barnett, Feb. 21. Improvement, being a smut fanning-mill, Thomas Pierce, Feb. 21. Improvement in hanging window sashes, William W. Hopkins, Feb. 24. " Improvement, being a spinning-wheel and twisting-mill for the purpose of making cordage," William B. Dyer, Feb. 27. A machine for hulling clover seed, Jacob Worrell, Feb. 27. Improvement in air or bellows pumps for raising water, Daniel M. Miller, March 5. Improvement, being a machine for washing clothes, scouring, fulling, and cleansing cloth, Daniel S. Dean, Feb. 29. Improvement, being a mode of preparing marble for painting on, Archibald Robertson, March 5. Improvement in window fastenings, or springs for fastening and supporting sash-lights, Daniel M. Miller, March 8. Improvement in extinguishing fires in houses, &c. Samuel P. Lord, jun. March 10. Machine for watering cattle, Moses Smith, March 16. Improvement in the bedstead, so constructed that it may be taken down and removed by one person, in case of fire, or on other occasions, with much ease and expedition, Ward Gilman and William Jackson, March 19. Machine for preparing what is commonly called top and swingled tow for paper, Abraham Frost, March 19. Improvement, being a " wry-fly," which may be applied by wind or water to various machines, viz. grist-mills, hulling-mills, spinning-mills, fulling-mills, paper-mills, and to the use of furnaces, &c. Benjamin Tyler, March 19. Improvement in manufacturing coat and waistcoat buttons, George W. Robinson, March 24. Improvement, being an inclined-plane-statical-

wheel machine, for facilitating the passage of boats in canals, or for removing earth, stones, or other heavy bodies from hills, &c. by the inclined plane, John Williams, March 23. Machine for the improvement of navigation, Anthony Hunn, March 24. "Improved still and boiler," John Naylor, March 31. Improvement in the mode of making shot, Phineas Daniel, March 31. Machine for breaking and cleansing flax and hemp, Owen Roberts, April 12. Improvement in the mode of working sheet tin into different wares, Calvin Whiting, and Eli Parsons, April 14. Improvement in springs for window sashes, Joseph Eaton, April 14. Machine for slitting and heading nails, Michael Garber, April 17. Double steam-bath still, John James Giraud, April 18. Machine for cleaning flax-seed from cockle, yellow-seed, cheat, and all foul seed, which may be applied to separate wheat, rye and other grains from each other, and all impurities, Paul Goltry, April 24. Machine for shelling clover seed, Michael Withers, April 30. Improved machine for cutting straw and hay, &c. &c. Moses Coates and Evan Evans, April 30. Improvement in paper-mills, Thomas Langstroth, May 1. Improvement in the construction of pump-boxes, or pumps, designed for the use of ships of war, merchant vessels, or other purposes where water is required to be raised, John Stickney, May 1. Columbian threshing, break and cleaning fan, Samuel Houston, May 3. Machine to be fixed to the top of a common churn, Levi Stephens, May 8. Machine for shelling and cleaning corn, which may likewise answer the purpose of grinding tanner's bark, and provender for cattle and horses, Levi Stephens, May 8. Improvement of the lantern, John Staniford, jun. and Amos D. Allen, May 10. Composition for tablets to write or draw on, Amos D. Allen, May 10. Machine to cut strips or chips of wood to make chip hats, bonnets, &c. Amos D. Allen, May 10. Furnace for making pot and pearl ashes, with the manner of using, and the materials of which the same is composed, Edward Crafts, jun. May 12. Machine or apparatus for making salt, Ezra Weld, May 16. Machine for cleaning and moating cotton after it has been ginned, James Simons and Joseph M'James, May 17. Machine for making nails and spikes, Burgiss Allison and Richard French, June 8. Improvement in making thimbles, Asa Spencer, June 8. Improvement in machines for clearing grain from straw, &c. William Tunstall, June 30. Improvement in the mode of pumping and raising water, Benjamin Folger, July 7.

Improvement in the construction of the fulling-mill, called the double crank, Levi Osborn, July 12. Improvement in the plough, John Deaver, July 12. Improvement in the auger, Christopher Hoxie, July 12. Improvement in the lime-kiln, Thomas Power, July 12. Metallic grinder, or hone for razors, penknives, scissors, surgeon's instruments, and all kinds of fine-edged tools, Christian Veltenair, August 10. Improvement in the machine for cutting nails, Nicholas Boureau, August 21. Machine for raising water from wells, William Harington, August 28. Improved windlass for ships or vessels, Hezekiah Betts, August 29. Machine to cut chips or strips of wood to make chip hats and bonnets, brooms, baskets, sieves, matting, and for various other uses, John Roberts, Amos D. Allen, and Ezekial Kelsey, Sept. 5. Crushing plaister-mill, Emanuel Kent, Sept. 14. Improvement in suspenders, Orange Webb, Sept. 18. Improvement in wind-mills, Richard Weems, Sept. 20. A waggon, or carraige, to be worked by hand, John Bolton, jun. Sept. 29. Method to prevent chimnies from admitting water in rainy weather, John James Thomas, Oct. 2. Forcing pump to raise water, Aaron Taylor, Oct. 4. "The rheumatic liniment," for chronic rheumatism, strains, &c. Abel Brown, Oct. 17. Improvement in gallows, or suspenders, for breeches, pantaloons or trowsers, &c. Simon Smith, Oct. 23. Improvement in candlesticks, Benjamin Dearborn, Oct. 29. Machine for breaking dough, Laban Folger, Nov. 1. Machine for cooling and filtering water or other fluids, Daniel M'Mullin and Thomas M. Corby, Nov. 6. Composition, or cement, to prevent the roofs and other parts of houses from taken fire, David Stodder, Nov. 16. Improvement in sash-springs, John Hooker, Nov. 19. Improvement in the threshing machine, James Deneale, jun. Nov. 20. Improvement in the oil press, Josiah White, Nov. 27. Machine for granulating gun-powder, E. I. Du Pont de Nemours, Nov. 23. Improvement in the cow or sheep bell, Simon Newton, Dec. 22. Machine for cutting nails with, and not across the grain of the metal, Frederick William Geyssenhayner, Dec. 22. Improvement in wind-mills, William Stanton, jun. Dec. 26. "New invented window springs," Isaac Scott, Dec. 26. Machine for boring gun barrels, Nathan Fobes, Dec. 31. Manufacturing ashes, Joseph Bellows, jun. and Ebenezer White, Dec. 29. Medicine called "bilious cordial," Samuel Chamberlaine, Dec. 31. Mode of improving or setting a horse's ears, Seth Janes, Dec. 31.